

Mapping Syllable Types with Phoneme Grapheme Mapping™

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In this article, readers will gain a depth of understanding of:

1. Phoneme Grapheme Mapping™ and its relationship with orthographic mapping.
2. Why using letters in phonemic awareness instruction is beneficial for students.
3. Teaching 5 of the 6 syllable types with Phoneme Grapheme Mapping™: closed, open, silent e, r-controlled, and consonant-le

Phoneme Grapheme Mapping™ and Orthographic Mapping

The concept of Phoneme Grapheme Mapping™, developed by Kathryn E. S. Grace (2006), is a pivotal process in literacy development. It involves matching individual phonemes to the graphemes representing them, equipping students with the skills to spell words accurately.

PGM involves two essential components in early reading development: phonemic awareness and orthographic mapping. Phonemic awareness is the ability to notice, segment, and manipulate individual phonemes, the smallest parts of spoken language (sounds) that combine to form words.

Orthographic mapping is “a mental process used for storing words in [long-term] memory for automatic retrieval” (Moats, 2020, p. 300), thus connecting phonemes in known words to their spellings. Every word has three forms: phonetic structures (sounds), orthographic structures (spelling), and semantic structures (meaning).

Students beginning to make associations between phonemes and their corresponding letters and other graphemes are ready for PGM. According to Ehri (Shanahan, 2020, personal communication), “PA and phonics skills and instruction are reciprocally intertwined as children acquire PA, spelling, sight word reading, and decoding skills.”

Frequently phonemic awareness has been taught orally, separate from phonics, the latter of which includes reading and/or writing graphemes. For example, a teacher would segment a word into sounds, and the student would listen and blend the sounds to say the target word (f-r-ě-sh – *fresh*). This approach is not recommended. Instead, prominent reading researchers (Ehri, 2020; Erbeli, 2024; Shanahan, 2020) have found that including graphemes in PA instruction is more effective than oral activities alone.

Curious Question:
Which words in English were once
actually two separate words?

A meta-analysis conducted by Erbeli et al. (2024) found that more than 10 hours of PA instruction without graphemes resulted in diminishing returns, whereas PA/phonics (with graphemes) continued to result in increased returns after 16 hours of instruction.

There are various ways to incorporate letters into PA activities and instruction. Phoneme Grapheme Mapping™ is one powerful instructional strategy that involves segmenting individual phonemes in a spoken word followed by writing its corresponding grapheme into separate sound boxes (see figures below). This helps solidify the mental process of orthographic mapping by connecting individual phonemes with their visual representation. This multimodal approach to instruction activates learning. First, students manipulate blocks or letter tiles to indicate individual phonemes in a word. Second, students identify the corresponding graphemes by writing them on a word-mapping grid. Third, students read the words they have written. This high-leverage activity combines auditory, visual, and kinesthetic (writing) modalities.

Students quickly see and learn that the number of sounds in a word is not always equal to the number of letters needed to spell the word correctly, which is the foundation of the Alphabetic Principle in the English language. This procedure employs various mapping methods to illustrate our written language's complex yet predictable phoneme/grapheme relationships.

By mapping sounds to print, students gain a metacognitive approach to decoding, spelling, and reading skills (Grace, 2006, 2022) that are necessary for learning more intricate spelling patterns at the upper-elementary and secondary levels.

Why Teach Syllables?

Syllable knowledge aids young readers in decoding words and benefiting from phonics instruction. Syllables are crucial for phonological processing (Ecalte & Magnan, 2007) and play a significant role in English due to the relationship between spelling patterns, phonemes, and pronunciation, which depend on syllable placement (Vernezky, 1967). Ehri emphasizes the vowel sound as the core of syllables and vital for early phonemic awareness and reading development studies show that just 2-9 hours of syllable instruction can improve word recognition and reading comprehension (Shanahan, 2020, personal communication).

Some researchers, like Kearns (2020), question the reliability of syllable rules, but syllable types and patterns are distinct from rigid syllable rules. Bhattacharya and Ehri (2004) found that instruction fostering flexibility in syllable use for decoding led to better results than teaching strict syllabication rules. Subsequent studies consistently support the effectiveness of syllable instruction in enhancing reading skills. A syllable is a unit of sound containing one or more letters and one vowel sound. A vowel pattern can be recognized by its syllable type (e.g., CVC). Recognizing the syllable type(s) in a word makes it easier to decode and encode (spell).

More than 80% of words in English have more than one syllable. Here, we will discuss 5 of the 6 syllable types. Dr. Bruce Rosow will discuss the vowel team syllable, which contains 40+ different graphemes in the March issue of *Teaching Reading in Brief*.

Many English words are made up of more than one syllable. Nevertheless, reading programs tend to primarily focus on one-syllable words, even though children encounter multisyllabic words as early as first grade. Compound words are a perfect example, as in ***sunset, sandbox, backpack, catfish, gumball,*** and ***dustpan***. Explicit instruction on how to break these words into individual syllables helps students learn to read longer words.

It is much easier to read an unfamiliar, multisyllabic word using syllable chunks instead of attempting to sound out all the letters in one continuous string. Readers need to hold onto the phonemes in short-term memory while blending them together and recognizing the word. Therefore, spelling long words is easier and more likely to be accurate by encoding syllables, rather than expecting them to remember separate letters. This skill is especially important for struggling readers whose working memory may be limited (Grace, 2020).

The Closed Syllable Type

A closed syllable is a single vowel followed by one or more consonant sounds (such as ***it, tap, dust, lodge***). This is called a closed syllable because the vowel is “closed in” by the end consonant(s). In closed syllables, the vowel sound is short. “The closed syllable is the most

common spelling unit in English; it accounts for just under 50 percent of the syllables in running text” (Moats & Tolman, 2009).

Many of the 100 common words in English, such as ***that, not, on, with, as, at, this, but*** have a closed syllable. For this reason, closed syllable words are introduced first in an effective phonics curriculum scope and sequence and taught to mastery before introducing other syllable types. As students become proficient in reading and spelling closed-syllable words, teachers add the first digraphs (***ch, sh, th, wh***), beginning blends (such as ***st-, cl-, sw-, qu- str-***) and final blends (such as ***-nt, -sk, -mp, -st, -nch***).

Short vowel sounds require explicit and repeated instruction. Articulatory gestures and picture cue cards can help students discriminate among vowel sounds, such as in this word chain: ***pat, pet, pit, pot, putt***. For beginning readers, visual mnemonics, in which the letter image mimics the letter shape, such as an apple for lower-case ***a***, can more quickly embed the letter form into memory (Shanahan, 2021).

Oftentimes struggling older readers have not mastered short vowel sounds, requiring them to rely on other letters within words or contextual clues in sentences. Guessing words weakens word recognition, fluency and comprehension especially as text becomes more complex. Remediating short vowel weaknesses should be among the first instructional steps for these older students.

Mapping Closed Syllables: During instruction, the teacher states a closed-syllable word for the student to repeat and then orally segment into phonemes using counters (yellow for consonant sounds and red for vowel sounds). The student then matches the number of counters (sounds) to the number of sound boxes on the mapping grid. Finally, the student writes the word in the corresponding sound boxes (see below).

j	o	b		g	o	h	g	
g	o	t		b	l	o	t	c
j	o	t		p	o	n	d	
b	o	g						
p	o	d						
sh	o	p						
ch	o	p						
l	o	ck						

When teaching words with 2 or more closed syllables, begin with words containing different consonants in the middle (*kidnap*, *napkin*, *potluck*).

In general, the closed syllable in multisyllabic words must be followed by two consonants to maintain the short vowel sound in the first syllable. That is why some two-syllable words have twin consonants, even though just one medial sound is heard (*rabbit*, *gossip*, *tennis*).

Generally the second consonant is there to ensure the reader understands that the first vowel is short.

Exercises comparing words such as *dinner* vs. *diner*, *supper* vs. *super*, and *bitter* vs. *biter* reinforce this common syllable division pattern VC/CV (called rabbit or wombat words) and prime students for later instruction in the doubling rule (also known as the 1-1-1 rule), when adding vowel suffixes to closed-syllable words ending in one consonant (*swim* + -ing = *swimming*). Avoiding two-syllable words with a schwa sound is advised for early readers (*button*, *happen*, *collect*). The twin letters make just one sound so these are written in one sound box. The extra consonant is used as a placeholder to ensure the first syllable is closed. For syllable division, the twin letters (but not the sound) are shared between syllables as indicated by the different colored loops (see below).

a	t	t	i	c			
g	o	s	s	i	p		
r	a	b	b	i	t		
m	u	f	f	i	n		
t	r	a	f	f	i	c	

The Open Syllable Type

An open syllable ends with a vowel sound that is spelled with a single vowel letter (*a*, *e*, *i*, *o*, *u*, or *y*) that results in a long vowel sound (its letter name except for *y*) as in *go*, *he*, *she*, *taxi*, *happy*, etc. Both closed and open syllables have just one vowel letter. However, unlike a closed syllable, an open syllable does not have a consonant following the single vowel.

This allows the vowel to stay open creating a long vowel sound, instead of the short vowel sound in a closed syllable.

The letter **y** frequently occurs as a vowel in an open syllable. However, it makes two different sounds depending on whether the word is comprised of 1 syllable or 2+ syllables. For example, **y** generally says /ī/ (long *i*) in single syllable words (**my, fly, why, cry**), whereas **y** makes /ē/ (long *e*) sound in words with 2+ syllables (**baby, candy, hardly**).

Contrasting open syllables with closed syllables using colored sound blocks along with letter writing is an effective teaching method that helps students see whether a syllable is closed or open, as shown below. Multisyllabic words often contain open syllables for long vowel sounds (**radio, museum, volcano**).

			The <u>red vowel sound block</u> is <i>closed in</i> by the yellow consonant block.
b	e	d	
			The <u>red vowel sound block</u> is not <i>closed in</i> by the yellow consonant block.
b	e		

Open syllables are common in multisyllabic words. In the chart below, the percentage of each open syllable found in the 17,000 most frequent words in the English language is shown.

Percentage of Open Vowels found in the 17,000 most frequent words in the English Language. **

Open Vowel	Example	% of frequency
Open A	ba con	45%
Open E	be ware	40%
Open I	ti tle	37%
Open O	fo cus	73%
Open U	hu man	59%
Open Y as /e/	ba by	41%
Open Y as /i/	hy phen	14%

** Research by Paul Hanna (see Hodges, R E. (1966). The case for teaching sound-to-letter correspondences in spelling. *Elementary School Journal*, 66, 327-336, and the update, Fry, E. (2004). Phonics: A large phoneme-grapheme frequency count revisited.

Mapping Open Syllables: Since an open syllable contains a single vowel, that letter is placed alone in its box. Do not have students leave spaces between syllables when using the Phoneme Grapheme Mapping™ procedure. Instruct students to demonstrate their understanding of an open syllable by shading the boxes that contain open syllables in a specific color such as gray. They can also place a horizontal line (macron) above the final vowel in the syllable to show that it makes the long vowel sound.

The Silent-e Syllable Type

When there is a one-syllable word with one vowel followed by a single consonant sound and a final *e*, the first vowel is usually long, and the final *e* is silent. The “magic” silence of the *e* allows the name of the first vowel to be heard. Be aware that a single consonant sound can be represented by two letters if a digraph is involved (*ache*, *bathe*, *clothe*). We recommend telling students, “You should find a 1-1-1 pattern. First one vowel, then one consonant sound, and then single *e* to make the first vowel long.” This helps weed out words that do not have a silent-e syllable, like *horse*, *mouse*, *dance*, and *large* (Grace, 2006, 2022).

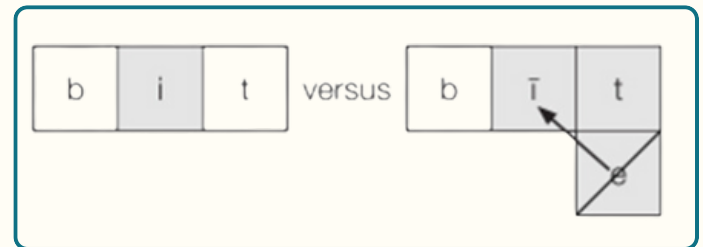
The first step in teaching this very useful generalization is to pair one-syllable words with a closed syllable (such as *cap*) with their corresponding one-syllable, silent-e partners (such as *cape*), as shown in these word pairs:

<i>at / ate</i>	<i>rob / robe</i>	<i>bit / bite</i>	<i>slid / slide</i>
<i>cut / cute</i>	<i>bath / bathe</i>	<i>grip / gripe</i>	<i>twin / twine</i>

Have students voice the short vowel sound of the closed syllables and the long vowel sound of the silent-e syllables.

Work with students to discriminate between the short and long vowel sounds and to use the name of the vowel letter as a sound in words with silent-e syllables.

Mapping the Silent-e Syllable



By mapping the sounds in the pairs above, students will see that the silent-e words use the same number of boxes as their closed-syllable counterparts with the exception of long *u* when it makes two phonemes as in its letter name. The letter *u* is often pronounced /y/ + /ū/ as in *huge*, *mute*, *use*. When initially teaching the *uCe* pattern, it is less confusing to present long *u* words that are pronounced with the phonemes /y/ + /ū/ because these share the vowel name *u*. Once mastered by students, the alternate *u* sound /ū/, can be introduced as found in *tube*, *flute*, and *rude*.

Note: In the chart below, *ū* is represented by /ōō/.

Silent -e Syllables With <i>u</i> Word List					
<i>u</i> as . y - /ōō/ Two Phonemes/ Two Sound Boxes			<i>u</i> as /ōō/ One Phoneme/ One Sound Box		
cube	huge	crude	dune	induce	
mule	fume	dude	June	spruce	
vule	mute	rude	prune	truce	
fuse	July	duke	tune	Bruce	
use	refuse	rule	flute		
cute	consume	plume	tube		
cure	muse	brute	Luke		
bugle	volume				

Grace, K. E. (2006, 2022).

As children encounter silent-e in multisyllabic words, their instruction should include the other uses of silent-e, that are not only a syllable type, as shown in the examples below.

Phoneme Grapheme Mapping™				Jobs for Silent “e”
d	a	te		1 job- makes the preceding vowel long
t	a	p	ed	2 jobs – makes the preceding vowel long and preserves the past tense suffix <u>-ed</u> which makes the single sound /t/ so it is in one box.
d	a	n	ce	1 job – to soften the “c”
p	a	g	ed	3 jobs- makes the preceding vowel long, softens the “g” and preserves the suffix <u>-ed</u> which says the single sound /d/ so it is in one box.
l	i	ve		1 job – No word in English ends in “v”
c. 2022 by Kathryn E.S. Grace				

The R-controlled Syllable Type

R-controlled syllables, sometimes called vowel-r syllables or “bossy r,” are syllables in which the vowel is controlled by the /r/ sound. When a vowel letter is followed by the letter *r*, the vowel sound is different from either the long or short vowel sound. It is important to teach students that the *r* always comes after the vowel and controls the vowel’s sound. R-controlled syllables are frequent but challenging for students to learn because the phoneme /r/ may at first be difficult to locate within words. Additionally, all r-controlled syllables can sound like /er/ (**dollar, doctor**), which must be targeted for instruction.

Students require ongoing and frequent review to master r-controlled spellings. Students often place *r* in front of the vowel because /r/ is the first sound they hear. This creates a consonant blend and forms incorrect spellings such as, “frist” for **first**, “gril” for **girl**, and “brithday” for **birthday**. However, after students have engaged in repeated practice activities targeting this syllable type, they can distinguish between spelling with consonant blends and r-controlled syllables, and these errors should diminish.

The five main vowels (**a, e, i, o, and u**) combine with “r” to make three distinct sounds represented by five different spelling choices, as shown below. R-controlled syllables with *y* are rare (**martyr, lyric, tyranny**) and better taught in upper-elementary and secondary grades. Although the sound of /er/ can also be spelled with **ar** (dollar, polar) or with **or** (**worm, doctor**), these spellings of /er/ are less frequent than **er, ir, and ur**.

R-controlled Vowels and Their Frequency of Use in English		
89%	97%	77% *
<i>ar /ar/ as in art</i>	<i>or /or/ as in orbit</i>	<i>er, ir, ur /er/ as in her, sir, and fur</i>
car chart bark tarp	for born thorn tort	germ girl turn thermal birth burn shorter thirst church smaller firsi churn

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Mapping R-controlled Syllables: Reading and spelling are reciprocal skills. If students can spell the words, they will be able to read the words. Be sure to have students use one box for the vowel + r since the *r* changes the sound of the vowel (see mapping grid below).

Recommended steps for instruction and practice:

1. Student reads the target word.
2. Student uses sound blocks to segment the word into phonemes. As a vowel sound, one red block represents an r-controlled phoneme.

Student writes the word onto the Phoneme Grapheme Mapping™ paper. Since the R-controlled vowel represents one sound, its grapheme (*ar, or, er, ir, ur*) should be placed in one box on the mapping grid, as shown below.

Phoneme-Grapheme Mapping
(A Method for Bridging Sound to Print)

Name: _____ Date: _____

c	ir	c	u	s				
b	ir	th	m	ark				
t	ard	y						
e	er	h	a	e	s			
s	ur	p	r	i	ss			
m	ur	m	ur					
d	i	s	t	ur	b			
f	or	t	r	e	ss			

The Consonant-le Syllable Type

A consonant-le syllable is always found at the end of a base word, as in **ta-ble** and **top-ple** and as the name implies, it is spelled with a consonant and **-le** combination, which is a 3-letter grouping. This syllable contains a schwa vowel sound, so it can appear to students as only the preceding consonant phoneme plus *l*.

Mapping the Consonant-le Syllable: When isolating the sounds in the consonant-le syllable, we generally hear two sounds, the consonant and /l/. The consonant in the consonant-le pattern is usually discernible, but the schwa is coarticulated with the /l/, making it sound like the consonant /l/ sound is the only sound being spoken. However, we know that every syllable in our language needs to have a vowel sound, so we treat **-le** in the consonant-le syllable as one grapheme. We draw a schwa symbol around the entire **-le** grapheme to mark the existence of a vowel sound.

b	u	ck	le
p	eo	p	le
r	a	tt	le
p	u	zz	le
C	a	s	le

a	b	le	c	a	n	d	le
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Some teachers choose to map the consonant-le syllable as three sounds, treating the schwa as a discrete vowel sound rather than one that is coarticulated. In such cases, wrap the schwa symbol around the **le** grapheme, as shown below (Grace, 2006, 2022).

b	l	e
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It is important to note that syllable division does not always correlate with phoneme-grapheme relationships as in the case of **bubble**, which divided into syllables would be **bub-ble**. Therefore, it is important to not have children try to divide syllables on Phoneme Grapheme Mapping™ grid paper. Instead have students color each syllable within the word so the shared **bs** can be shown with two different colors.

b	u	b	b	le
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Another template for Phoneme Grapheme Mapping™, the Syllable Writing grid, is an excellent tool for helping students read and spell words containing the consonant-le syllable (Grace, 2006, 2024). Teach children to recheck their lists to ensure they have added a consonant before *-le* in the same column to create the 3-letter grouping. Then, ask students to identify what type of syllable they created in the first syllable. This method helps students catch errors such as “cradle” for *cradle* and “botle” for *bottle*, because they can readily see whether they created an open or closed first syllable.

Syllable Writing Grid		
c. 1991 by Kathryn E.S. Grace		
1 st syllable	2 nd syllable	Notes
tram	<u>ple</u>	
tri	<u>fle</u>	
<u>whis</u>	<u>tle</u>	The silent “t” in whistle is only there to preserve the three letter consonant-le grouping.
<u>ap</u>	<u>ple</u>	We do not hear 2 p’s. The first “p” is only there to keep the syllable closed.
sin	<u>gle</u>	<u>ng</u> is not a digraph in this word. The “n” is making the /ng/ sound because it precedes a hard /g/ sound.

Summary: Listed below are words mapped by their letter-sound correspondences in accordance with the Phoneme Grapheme Mapping™ process. As we tell our students, the words are mapped as one sound per box. Spelling patterns with double letters (such as -ll, -ss, etc.), digraphs (sh, th, etc.), and r-controlled syllables are written in one box since these letters represent one sound.

closed	dish	d	i	sh				
open	me	m	e					
open/closed	student	s	t	u	d	e	n	t
silent e-	stride	s	t	r	i	dē		
Closed/silent-e	invite	i	n	v	i	tē		
r-controlled	charter	ch	ar	t	er			
R controlled/ consonant-le	marble	m	ar	b	le			

Silent-e syllables require the silent-e to be placed in a box with the final consonant sound and then crossed out with a line looped to the preceding vowel, which has a macron (a straight line above a vowel, such as ā) to show its long sound. Since silent-e does not make a sound, it does not get its own sound box.

Can you identify the following syllable types in these multisyllabic words?

invest refuse arcade
idle spiteful

When Students Continue to Struggle with Reading

When students struggle with any skill, teachers should assess their understanding and application of the underlying concepts. For example, when students struggle with Phoneme Grapheme Mapping™, assessing phonemic awareness skills through an assessment such as the *CORE Phoneme Segmentation Assessment* provides information on whether more phonemic awareness instruction and practice are necessary. Involving the school speech-language pathologist to determine the student's difficulties can be helpful, too. The director of the University of Florida Literacy Institute, Dr. Holly Lane, distinguishes multimodal approaches as macro- and micro-modal instruction. For example, micro-modal methods emphasize “small muscle movements of the vocal tracts” when teaching PA and phonics. This includes directing students to hold a mirror to their face while articulating phonemes to notice “articulatory gestures and how the mouth looks and feels when producing specific sounds. This includes noticing the placement of the lips and tongue and whether the vocal folds are vibrating.” In her description, Lane cites Ehri (2014), who stated:

It is common for teachers to direct students' attention to the sounds that are heard in words. However, there is reason to believe that sounds processed by the ear are less central than articulatory gestures produced by mouth movements in saying words.

According to the motor theory of speech perception (Liberman, 1999), articulatory gestures rather than acoustic features represent phonemes in the brain. Additionally, ease of processing favors gestures. Whereas sounds are ephemeral and disappear as soon as they are heard, mouth positions are tangible and can be felt, viewed in a mirror, and analyzed by learners (2014, p. 10).

If students demonstrate a strong awareness of phonemes in words but still need more practice with the skill of Phoneme Grapheme Mapping™, word chaining is an instructional technique to reinforce that skill. Word chaining requires students to change one phoneme in a word to make a new word (such as **tin**, **fin**, **fine**, **pine**, **spine**, **spun**). This process continues for about 8 to 10 words, depending on the student's stamina. The first word is written or built with tactile letters. The teacher then asks what must be added, deleted, or changed to create a new word. For example, the start word is **nap**. The teacher could ask, "What would you change to make the word **nip**." The student would then segment each phoneme in the word /n/ /ă/ /p/ while pointing to the letters to identify which phoneme is changing and which letter is needed to represent the new phoneme in the new word. Depending on the task, this provides targeted practice in blending and segmenting phonemes, plus adding, deleting, or manipulating them.

Writers' Reflections

Nicole Chick: As a private literacy instructor, I use Phoneme-Grapheme mapping in individualized lessons that are tailored to meet each student's unique needs. Phoneme-Grapheme Mapping™ can be applied to all syllable types, so no matter where students are on their literacy journey, this instructional strategy can support their growth. Providing sound boxes on grid paper for students during the spelling portion of the lesson provides a visual scaffold for them. This helps them slow down when thinking about the phoneme-grapheme relationship needed to spell the targeted word. As they learn that multiple spellings can represent the same sounds, they can pull from previous lessons to think about how these sounds are represented in the word and spell it correctly.

Kathryn Grace: I first created the process of Phoneme Grapheme Mapping™ (PGM) while teaching in my Vermont classroom in the 1980s. I had noticed that the concept of one-to-one correspondence was familiar to young students in mathematics, but they lacked this knowledge in sound-spelling relationships. PGM was created to help students understand that the number of phonemes they hear in a word may be different from the number of letters that represent those sounds.

PGM starts with sound awareness and highlights phoneme-grapheme relationships by depicting the internal details of both spoken and written words through a series of intricate mappings. This method not only appeals to our math-minded students but is highly effective and engaging for students of all ages. In the foreword to my book, Dr. Moats

wrote, "This program embodies the true meaning of 'the alphabetic principle' which is much discussed and seldom taught in such an engaging, logical, organized and complete fashion... It's powerful; it's fun" (2006, 2022). This sentiment was frequently echoed by my students, who would beg to learn new mappings each day. "Are we going to do words with the letter x today, Mrs. Grace? How about schwa? I love "schwazing" my words. Can we do that, too?"

Their enthusiasm for using PGM to demonstrate their knowledge was often seen in how they "autographed" their work (see sample below). I often hear from former students who mention our word study lessons and "moving those blocks" and what a difference it made in their ability to read and spell. They note they are now able to pass that knowledge onto their own children when they help with homework and how proud and helpful it makes them feel as parents. As a teacher, that's the greatest acknowledgment of all.

Answer to this issue's Curious Question:

alpha + beta = alphabet
bang + smash = bash
blow + spurt = blurt
day's + eye = daisy
dizzy + dotty = ditsy
flap + aghast = flabbergast
glamor + ritz = glitz
haggle + tussle = hassle
motor + pedal = moped
poke + rod = prod
slovenly + language = slang
squirm + wiggle = squiggle
wipe + sweep = swipe

Kress, J. E., & Fry, E. B. (2016). *The reading teacher's book of lists*. Jossey-Bass.

Meet the Writers



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.



Nicole Chick, M.S, Ed, CAS Remedial Reading and Reading Consultancy, A/OGA is a seasoned Literacy Specialist with over two decades of experience in education. With teaching licenses in both Connecticut and Vermont for elementary education and specialized literacy instruction, Ms. Chick has made a significant impact as a public educator and university-level instructor. Throughout her career she has provided guidance to preservice teachers and served as a mentor in various educational settings. Ms. Chick provides structured literacy instruction to students and consults with school districts on best literacy practices out of her literacy center, Early Literacy Labs, in Waitsfield.

Dorinne Dorfman, Ed.S., Ed.D., OG/A

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.



References

- Diamond, L. (2008). *Assessing reading: Multiple measures for kindergarten through twelfth grade* (2nd ed.). CORE Consortium on Reading Excellence, Inc.
- Bhattacharya, A., & Ehri, L. C. (2004). Graphosyllabic analysis helps adolescent struggling readers read and spell words. *Journal of Learning Disabilities*, 37(4), 331-348.
<https://psycnet.apa.org/record/2004-16067-005>
- Ecalte, J., & Magnan, A. (2007). Development of phonological skills and learning to read in French. *European Journal of Psychology of Education*, 22(2), 153-167.
https://www.researchgate.net/publication/225708091_Development_of_phonological_skills_and_learning_to_read_in_French
- Ehri, L. (1995). Phases of development in learning to read words by sight. *Journal of Research in Reading*, 18(2), 116-125. <https://eric.ed.gov/?id=EJ514638>
- Ehri, L. C. (2014). Orthographic mapping in the acquisition of sight word reading, spelling memory, and vocabulary learning. *Scientific Studies of Reading*, 18(1), 5-21.
<https://psycnet.apa.org/record/2014-00450-002>
- Ehri, L. C. (2020). The science of learning to read words: A case for systematic phonics instruction. Special issue: The science of reading: Supports, critiques, and questions. *Reading Research Quarterly*, 55(S1), S45-S60. <https://ila.onlinelibrary.wiley.com/doi/full/10.1002/rrq.334>
- Erbeli, F., Rice, M., Xu, Y., Bishop, M. E., & Goodrich, J. M. (2024). A meta-analysis on the optimal cumulative dosage of early phonemic awareness instruction. *Scientific Studies of Reading*.
<https://doi.org/10.1080/10888438.2024.2309386>
- Grace, K.E. (2022). Mapping madness. A Webinar for Wisconsin's Science of Teaching Reading Community.
- Grace, K. E. (2006, 2022). *Phonics and spelling through phoneme-grapheme mapping*. Really Great Reading.
- Grace, K.E. (2023). Droppin' knowledge: How to implement Phoneme Grapheme Mapping™. Webinar.
- Hanna, P. R., Hanna, J. S., Hodges, R. E., & Rudorf, E. H. (1966). Phoneme-grapheme correspondences as cues to spelling improvement. Department of Health and Welfare.
- Kearns, D.M. (2020). Does English have useful syllable division patterns? *Reading Research Quarterly* 55(S1), S145-S160. <https://eric.ed.gov/?id=EJ1267452>

- Lane, H. B. (2025). Multisensory instruction: What is it and should I bother? *Collaborative Classroom*. <https://www.collaborativeclassroom.org/blog/multisensory-instruction-what-is-it-and-should-i-bother>
- Liberman, A. M. (1999). The reading researcher and the reading teacher need the right theory of speech. *Scientific Studies of Reading*, 3(2), 95–111. <https://psycnet.apa.org/record/1999-13283-001>
- Moats, L. C. & Tolman, C. A. (2009). *Language essentials for teachers of reading and spelling (LETRS)*. Sopris West. <https://www.readingrockets.org/topics/spelling-and-word-study/articles/six-syllable-types#:~:text=The%20closed%20syllableA%20'short,by%20one%20or%20more%20consonants>.
- Moats, L. C. (2020). *Speech to print*. Brookes.
- Shanahan, T. (2020). Letters in phonemic awareness instruction or the reciprocal nature of learning to read. *Reading Rockets*. <https://www.readingrockets.org/blogs/shanahan-on-literacy/letters-phonemic-awareness-instruction-or-reciprocal-nature-learning#:~:text=The%20reason%20I%20say%20that,a%20supposedly%20later%20developing%20skill>.
- Shanahan, T. (2021). A question I hate: Should we use pictures (embedded mnemonics) when teaching phonics? *Shanahan on Literacy*. <https://www.shanahanonliteracy.com/blog/a-question-i-hate-should-we-use-pictures-embedded-mnemonics-when-teaching-phonics#:~:text=The%20research%20these%20days%20shows,knowledge%20in%20reading%20and%20spelling>.
- Shanahan, T. (2021). On eating elephants and teaching syllabication. *Shanahan on Literacy*. <https://www.shanahanonliteracy.com/blog/on-eating-elephants-and-teaching-syllabication>
- Venezky, R. L. (1967). English orthography: Its graphical structure and its relation to sound. *Reading Research Quarterly*, 2(3), 75–105. <https://doi.org/10.2307/747031>

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