Teaching Spelling
An Opportunity to Unveil the Logic of Language

by Louisa Moats

Let's begin with a simple test of your spelling knowledge. Which one of these is a correct spelling: *acommodate, accomodate, accommodate*? Which one of these is a correct spelling: *committment, comitment, commitment*? Which one of these is the name for the last course of a meal: *desert, dessert*? Which one of these is the name for a memory device: *pneumonic, neumonic, mnemonic*?

In each case, the last choice is correct. Note that you can read all of these words. Spelling them may be more problematic. Why? And what does spelling have to do with reading and language? The answers to these questions are important, as they provide the rationale for embracing Structured Literacy (SL) practices in spelling instruction and moving spelling instruction to a more central place in the language arts lesson.

Spelling Depends on Knowledge of Language

Although spelling a word does require exact knowledge of its letters, learning those letters is not a rote memory skill, whereby images are imprinted on the brain. Researchers who study the nature of word memories (Adlof & Perfetti, 2014; Treiman, 2017) have identified four interrelated aspects of word knowledge: 1) phonological form (the word's pronunciation and phonemic makeup), 2) orthographic form or spelling, 3) semantics or word meaning, and 4) morpho-syntax, or the word's morphological structure and grammatical role.

All of these aspects of word memory are aspects of language processing. Good spellers have what are called high quality lexical representations or fully specified mental images of words that include all four dimensions of language knowledge. Similarly, poor spellers experience incomplete, inaccurate, or under-specified mental images because their processing of the word in any or all of these respects is less than optimal.

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Reading words is easier than spelling them because words can be recognized on the basis of partial or degraded word memories, whereas spelling requires complete and accurate word memories. That is why students with dyslexia may eventually learn to read many words that they cannot spell. Spelling supports reading: If students do learn to spell words, their recognition of those words for reading becomes more accurate and automatic (Ouellette, Martin-Chang, & Rossi, 2017).

How are word memories formed? Let's take a word from our spelling test, *commitment*. What has a good speller learned about this word, either explicitly or implicitly? A lot! See Table 1.

Building Orthographic Memory

The visual memory involved in spelling, then, is specific to learning orthography, and is deeply wired into our language learning systems. It is hinged to a child's awareness of phonemes—the parking spots for the letters and letter groups that represent phonemes in alphabetic writing systems. Gradually, spelling memory develops with a child's knowledge of word

TABLE 1. Linguistic Features of the Word *Commitment*		
Aspect of Language	**Word Features**	**(Perhaps Unconscious) Knowledge**
syntax	noun	The suffix *-ment* marks a noun.
morphology	three morphemes: *com-mit-ment*	*Com* is a Latin prefix meaning *with*; *mit* is a Latin root meaning *send*. These morphemes occur in many other English words and are spelled consistently.
semantic	A promise, obligation, responsibility. The act of restricting or confining a person.	Word has several meanings depending on context.

### Abbreviation

SL: Structured Literacy

structure, words' meaningful parts, and a word's role in sentence formation. Children's developing knowledge of these language layers can be observed from the very beginning of literacy development (Bourassa & Treiman, 2014; Treiman, 2017).

Beginning to Spell: Phoneme Awareness, Letter Sounds, and Letter Names

Phoneme awareness is the critical underpinning for the early stages of learning to spell and helps remediate the problems of poor spellers at any age (Kilpatrick, 2015). A direct and explicit approach gradually teaches the identity of all 25 consonant and all 18 vowel phonemes, which is not the same as teaching the 26 letters of the alphabet (Moats, in press; Moats & Tolman, 2019).

Identifying a speech sound means hearing it in isolation, saying it with attention to mouth formation or articulation, learning a key word that begins with that phoneme, and contrasting it with others with which it may be confused. Activities typically associated with phoneme awareness, such as segmenting phonemes in words, should be preceded by this more basic instruction. Understanding, for example, that /k/ is made in the back of the mouth without a voice and that it is not the same as /g/ is prerequisite for knowing that *back* is not *bag*.

Phoneme segmentation and manipulation ability, or lack thereof, distinguishes good and poor spellers at all ages (Cassar, Treiman, Moats, Pollo, & Kessler, 2005). Children may strengthen their phonemic awareness by placing a chip into a box for each speech sound in a word, saying each sound as the chip is moved, or stretching out a finger for each sound that is articulated.

| .	.	.

"sing" /s/ /ĭ/ /ng/
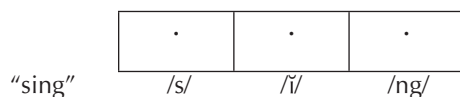
As they are learning the letter sounds, children also need to learn the letter names. Many letter names contain the phoneme that they represent. Others, such as *w*, *y*, and *h*, do not and are more difficult. The problem with teaching letter forms, letter sounds, and letter names together in a traditional multi-sensory association routine is that quite a few speech sounds are not represented by single letters of the alphabet (/th/, /sh/, /ng/, /ch/, /oi/, /au/, etc.). Those must be known and practiced, too; so teaching letter forms *and* phoneme-grapheme correspondences are two parallel strands in beginners' lessons.

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Learning Phoneme-Grapheme Correspondences

Explicit phoneme-grapheme mapping (Ehri, 2014; Grace, 2007; Moats & Tolman, 2019) requires the learner to match the letters/letter combinations in a word to the speech sounds they represent. The learner must pay attention to the internal details of the word in order to do this. A grapheme is any letter or letter combination that represents a single phoneme. One approach is to use a simple grid; each box of the grid represents a phoneme. Using a list of words that contain the correspondence or pattern being taught, students explicitly segment the word, grapheme by grapheme. The teacher says the word; then, the students repeat it, segment the sounds, and write the grapheme for each phoneme in sequence. For example, *freight* spells the long a (/ā/) with the four-letter grapheme, *eigh*.

f	r	eigh	t
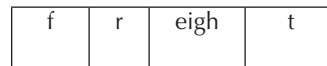
Groove: In this example, the *gr* combination is a consonant blend (two phonemes). The final *-ve* is an orthographic convention: the job of *e* is to prevent the word from ending in *v* and it has no function in marking the vowel. That is why it is in parentheses and does not get its own box.

g	r	oo	v(e)
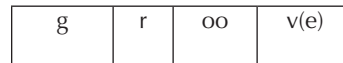
Phoneme-grapheme mapping is fundamental at any grade level, but is especially helpful with second- and third-grade students who have gaps in learning the basic code. It should be a teacher-led activity (not an independent activity), because its value is in consciously analyzing how print is representing speech. Saying words while looking at them and pulling them apart, with modeling and immediate feedback, should then be followed by practice including writing to dictation.

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Words with Less Predictable or Odd Spellings

Because they are often very old words from Anglo-Saxon whose pronunciation—but not spelling—has changed, high frequency words may have more odd or irregular correspondences than lower frequency content words with a Latin or other romance-language base. Often called "sight words," these words (*of, said, your, do, does,* etc.) are not, in fact, learned by sight or by a rote visual memory process. The links between spoken language and print that spellers make for more predictable words must be made for these oddities as well.

Although it may seem counter-intuitive, the foundational skills of phoneme awareness and phoneme-grapheme matching also facilitate learning the less common or odd words (Kilpatrick, 2015; Treiman, 2017). That is, students who are

good spellers of predictable words are also better at spelling less predictable words. Irregular words are learned most easily by students who already know common phoneme-grapheme correspondences and who can explicitly analyze the speech to print mapping system. This is because irregular words have some regular correspondences, and also because a good speller makes mental comparisons between what a spelling ought to be and what it is (*of* sounds like it should be *uv*) to form a detailed mental image of the word. Awareness of phoneme-grapheme correspondences, regular and irregular, is the "glue that holds the word in memory" (Ehri, 2004, p. 155). The close correlation between the ability to spell regular and so-called irregular words led to a major publisher abandoning two separate word lists from the *Test of Written Spelling* (Larsen, Hammill, & Moats, 2013) and combining them into one.

Some suggested methods for teaching words with less common patterns or correspondences include: a) grouping words with some memorable similarity (*two, twice, twenty, twilight, twin; one, only, once; their, heir; where, here, there*); b) calling attention to the odd part of a word (*fri̱end; a̱ny*); c) pronouncing the word the way it looks (*was* sounds like /w/ /ă/ /s/ not /w/ /ŭ/ /z/; d) using mnemonics (there is a rat in sep<u>ar</u>ate; the princip<u>al</u> is my <u>pal</u>); and e) asking the learner to pay very close attention to the letter sequence by visualizing it and building it backwards and forwards with letter tiles before writing it.

Orthographic Patterns and Position Constraints

English orthography is a symbol system that constrains the way letters can be sequenced and used. For example, only some can be doubled—*k, h,* and *i,* for example, cannot. Words never end in the letters *j* or *v*. The letter *c* spells /k/ before *o, a,* and *u,* and introduces initial blends as in *cle̱an* and *crown*. The combination *-ck* occurs right after a stressed short vowel.

Good spellers may intuit these and other patterns but most students benefit from discovering them through guided word sorting. Instead of telling students, for example, how the letters *k* and *c* and *ck* are used to represent /k/, give them a list of words with those three graphemes. See if students can discover the pattern. Usually, this process must be guided closely by teacher questions, such as, "What letter comes immediately before (or after) the spelling for /k/?" Consciously processing and describing the patterns at work helps students establish higher quality mental images for the words.

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Inflections and Suffix Change Rules

Inflections (-ed, -s, -es, -ing, -er, -est, which are also called grammatical suffixes) are morphemes that change the number, person, or tense of the word to which they are added, but they do not change its part of speech. The spelling errors in intermediate students' writings frequently involve inflections, especially -ed and plural -s and -es (Moats, Foorman, & Taylor, 2006). Inflections should be introduced before other aspects of derivational morphology because they are so essential for writing basic sentences, but they must be practiced year after year.

The suffix *-ed* is complex and should be taught one step at a time. Although its meaning and spelling are constant, the suffix has three pronunciations: /d/ as in *hummed*; /t/ as in *puffed*; and /id/ as in *wanted*. Students should begin by sorting words according to the sound of the past tense ending. Explain that only one of the endings (the -ed on *wanted*) is a spoken syllable, and the other two pronunciations are merely single phonemes. The -ed spelling looks as if it spells a whole syllable, but most of the time it does not; thus, the endings are easy to ignore or to misspell.

There are three suffix addition rules in English orthography that never fail to challenge all spellers, and especially poor spellers. We double certain final consonants when vowel suffixes are added to words (*running, hopped*); we drop silent e at the ends of words when we add suffixes beginning with vowels (*hoping, smiled*); and we change *y* to *i* when any suffix is added to a word except one that begins with the letter *i* (*studies, merrily*). These rules must be tackled because they are so commonly used. If possible, familiarize students with inflected forms that do not change the base word (*mended, punted, huffed, misses, killer, bringing*) before introducing the change rules one at a time. Start by decomposing familiar words with inflections by taking off the ending and finding the base word: *hoping = hope + ing; studious = study + ous; committed = commit + ed*. Then start combining base words and endings. For more details about these rules and how to teach them, consult Carreker (2018), Moats & Tolman (2019), or Moats (in press).

Multi-syllable Words and Schwa

Knowledge of the six basic written syllable types can support spelling, although learning these patterns should be a stepping-stone toward understanding of morphology. Familiarity with the open, closed, and consonant-le written syllable types enables spellers to know when and why double consonants occur in words that end with a consonant-le syllable. When an open syllable is combined with a consonant-le syllable—as in *noble, title,* and *maple*—there is no doubled consonant. In contrast, when a closed syllable is combined with a consonant-le syllable—as in *dabble, little,* and *topple*—a double consonant results. Note that this is purely a convention of writing, not a transcription of speech. We do not pronounce two separate consonants in the middle of words like *apple*.

Multi-syllable words bring up the unavoidable problem of schwa (/ə/), the unaccented vowel sound that has been emptied of its identity and can be described as a lazy vowel. Teach children that some vowel sounds have the stuffing taken out of them when they are unaccented. After students spell a word such as *prob-le̱m, a̱-dept,* or *co̱m-mit,* they can say the word naturally and mark the syllable that has a schwa. Instruction about schwa helps students understand why some words do not sound the way they are spelled—and reminds teachers not to

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Latin-based Prefixes, Suffixes, and Roots

Having already learned the common inflectional endings, students should be ready to move on to Anglo-Saxon and Latin prefixes (such as *pre-, sub-, re-, mis-,* and *un-)* and suffixes (such as *-en, -ly, -y, -ful, -less*, and *-ness*) (Henry, 2018). Prefixes and suffixes have stable spellings and meanings. Derivational suffixes such as *-ly, -al, -ment,* and *-ous,* also signify the part of speech of the word to which they are added. The stability of morpheme spellings assists with their recognition and recall, even though the meaning of a word may not simply be the sum of its parts (*apartment* and *matchless*, for example).

The Big Picture

Teaching spelling according to the principles of Structured Literacy means teaching the structure of language at all levels, including phonology, phoneme-grapheme correspondences, orthographic patterns and constraints, meaningful parts of words (morphemes) and their grammatical roles. Students remember best what they have thought about and understand, so the goal is to make sense of print and how it represents speech (King, 2000). This done, all of the other Structured Literacy components and practices together can rescue struggling students and help them become competent readers and writers.

References

Adlof, S. M., & Perfetti, C. A. (2014). Individual differences in word learning and reading ability. In C. A. Stone, E. R. Silliman, B. J. Ehren, & G. P. Wallach (Eds.), *Handbook of language and literacy: Development and disorders* (2nd ed.) (pp. 246–264). New York, NY: Guilford Press.

Bourassa, D. C., & Treiman, R. (2014). Spelling development and disability in English. In C. A. Stone, E. R. Silliman, B. J. Ehren, & G. P. Wallach (Eds.), *Handbook of language and literacy: Development and disorders* (2nd ed.) (pp. 569–583). New York, NY: Guilford Press.

Carreker, S. (2018). Teaching spelling. In J. Birsh and S. Carreker (Eds.), *Multisensory teaching of basic language skills* (4th ed.*)* (pp. 389–430). Baltimore, MD: Paul H. Brookes Publishing.

Cassar, M., Treiman, R., Moats, L., Pollo, T. C., & Kessler, B. (2005). How do the spellings of children with dyslexia compare with those of nondyslexic children? *Reading and Writing, 18*, 27–49.

Ehri, L. C. (2004). Teaching phonemic awareness and phonics: An explanation of the National Reading Panel meta-analysis. In P. McCardle & V. Chhabra (Eds.), *The voice of evidence in reading research* (pp. 153–186). Baltimore, MD: Paul H. Brookes Publishing.

Ehri, L. C. (2014). Orthographic mapping in the acquisition of sight word reading, spelling memory, and vocabulary learning. *Scientific Studies of Reading, 18*, 5–21.

Grace, K. (2007). *Phonics and spelling through phoneme-grapheme mapping.* Longmont, CO: Sopris West Educational Services.

Henry, M. (2018). The history and structure of written English. In J. Birsh & S. Carreker (Eds.), *Multisensory teaching of basic language skills* (4th ed.) (pp. 540–555). Baltimore, MD: Paul H. Brookes Publishing.

Kilpatrick, D. A. (2015). *Essentials of assessing, preventing, and overcoming reading difficulties*. Hoboken, NJ: Wiley.

King, D. (2000). *English isn't crazy: The elements of our language and how to teach them*. Austin, TX: PRO-ED.

Larsen, S. C., Hammill, D. D., & Moats, L. C. (2013). *Test of written spelling* (5th ed.). Austin, TX: PRO-ED.

Moats, L. C. (in press). *Speech to print: Language essentials for teachers* (3rd ed.). Baltimore, MD: Paul H. Brookes Publishing.

Moats, L. C., Foorman, B. R., & Taylor, P. (2006). How quality of writing instruction impacts high-risk fourth graders' writing. *Reading and Writing: An Interdisciplinary Journal, 19*, 363–391.

Moats, L. C., & Tolman, C. (2019). *LETRS: Language essentials for teachers of reading and spelling* (3rd ed.). Dallas, TX: Voyager Sopris Learning.

Ouellette, G., Martin-Chang, S., & Rossi, M. (2017). Learning from our mistakes: Improvements in spelling lead to gains in reading speed. *Scientific Studies of Reading, 21*, 350–357.

Treiman, R. (2017). Learning to spell words: Findings, theories, and issues. *Scientific Studies of Reading, 21*, 265–276.

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