

# **Improving Written Language Skills through Multiple-Linguistic Spelling Instruction**

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Spelling and word-level reading are written language skills that draw upon an individual's repertoire of linguistic knowledge, including phonological awareness; knowledge of orthography, vocabulary, morphological and semantic relationships; and mental orthographic images (Apel & Masterson, 2001; Apel, Masterson, & Niessen, 2004). Although spelling (encoding) and word-level reading (decoding) draw upon these areas of linguistic knowledge in different ways, each type of linguistic knowledge contributes to spelling and reading success (Treiman & Bourassa, 2000). A collective body of current research demonstrates the importance of integrating multiple linguistic processes within spelling instruction. In comparison to traditional spelling instruction and traditional reading instruction, multiple-linguistic spelling instruction has been shown to be more effective for improving student's spelling *and* reading performance (Apel, Masterson, & Hart, 2004; Kelman & Apel, 2004; Roberts & Meiring, 2006).

## **The Language of Reading & Spelling**

For both spelling and reading, individuals use multiple processes. They rely upon phonological awareness, and rely upon their knowledge of orthography, vocabulary, morphological and semantic relationships, and mental orthographic images.

### **Phonological Awareness**

The phonological awareness skills of segmenting, sequencing, discriminating, and identifying phonemes all play a role during the encoding process. Individuals use phonological segmentation skills when spelling by breaking down words into smaller units, such as syllables and phonemes, then linking these smaller units to their written forms. They use sound sequencing skills to map the letters to sounds in the correct order; and they use phoneme

discrimination and identification skills to perceive differences between speech sounds (e.g., between the short vowel *e* and *i* sounds). They also use phonological awareness to recognize that a difference in sound signals a difference in meaning (e.g., *pet* versus *pit*).

The decoding process draws upon the phonological awareness skills of identifying, sequencing, and blending phonemes. To read an unfamiliar word, the reader converts the individual letters and letter patterns into their corresponding phonemes, holds the sequence of individual sounds in phonological working memory for the length of time it takes to sound out the complete word, and then blends those individual sounds into a complete word. As students gain repeated exposure to the orthographic printed word form and the corresponding phonological structure of words through sounding out and blending all the phonemes in the words, they can more easily read familiar and unfamiliar words and increase reading fluency. Reading comprehension improves as well because rapid and accurate decoding allows individuals to decrease their focus on the decoding process and thus increase their attention on the meaning of what they read.

### **Orthographic Knowledge**

Individuals also draw upon their orthographic knowledge during the encoding and decoding processes. When spelling, individuals rely upon their knowledge of sound-letter relationships and knowledge of letter patterns and conventional spelling rules to convert spoken language to written form. This orthographic knowledge includes recognizing letter-sound relationships (e.g., the / t? /sound can be represented by the letters *ch*, *tch*, *t*, *ti*, *c*); knowing which letter patterns are acceptable (e.g., the / t? /sound is almost always spelled with the letters *ch* at the beginning of a word; at the end of a word the / t? /sound is always spelled with the letters *ch* after a long vowel sound); and understanding sound, syllable, and word position constraints on spelling patterns (e.g., the / t? /sound at the beginning of a word is never spelled with the letters *tch*).

When reading, individuals use orthographic knowledge of letter-sound correspondences to convert letters and letter patterns into individual speech sounds when decoding an unfamiliar word. For example, the reader relies upon his orthographic knowledge that the letter *c* is always pronounced as / s / when

followed by the vowel letters *e, i, y* to correctly sound out the first letter in the word *city*.

## **Vocabulary Knowledge**

Individuals use vocabulary knowledge to accurately store and retrieve the correct spelling of words. The knowledge of word meaning is particularly important for the correct spelling of homophone words; words that sound the same but have different meanings and spellings (e.g., *bare* and *bear*). Vocabulary knowledge is also helpful to correctly spell the *wh* consonant digraph because the / w / sound at the beginning of question words (what, where, when, why, which) is always spelled with the letters *wh*.

Beginning readers use their oral vocabulary knowledge to make sense of the words they see in print, and all readers use word meaning to effectively store new vocabulary words in long-term memory. Word-meaning, coupled with awareness of the complete phonological and orthographic structure of the word, is the “glue” that holds new reading vocabulary in the individual’s long-term memory. “Connections are formed that link letters in individual written words to phonemes in their pronunciations along with meanings in memory” (Ehri, 2004, p. ii).

## **Morphological Knowledge & Semantic Relationships**

Individuals also rely upon their morphological knowledge and knowledge of semantic relationships during spelling and reading. When spelling, individuals use their morphological knowledge and knowledge of semantic relationships when spelling inflected or derived forms of words (Carlisle, 1995). Specifically, individuals rely upon their knowledge of letter-meaning relationships of individual morphemes (i.e., suffixes, prefixes, base words, and word roots), their understanding of semantic relationships between base word and related words, and their knowledge of modification rules when adding prefixes and suffixes. For example, when an individual is required to spell an unfamiliar word (e.g., *magician*), knowledge of the base word (i.e., *magic*) and certain word endings (e.g., *-ian*) can help the student spell the unfamiliar word correctly. The need to use knowledge of word parts and related words to spell words becomes increasingly important as individuals begin to spell words of greater length and complexity.

As individuals learn to read more advanced texts, they must extract the meaning of new words that are not part of their oral vocabulary. Individuals use their knowledge of the meaning of prefixes, suffixes, and word roots and their knowledge of semantic relationships to figure out the meanings of unfamiliar words in text, and to comprehend what they are reading. For example, a reader who is unfamiliar with the meaning of the word *retractable* can extract the meaning of the word by considering the meaning of the three word parts: *re* (*back*) + *tract* (*pull*) + *able* (*can*) = *can pull back*.

### **Mental Orthographic Memory**

Individuals need to develop clear and complete mental representations of previously read words in order to automatically and accurately read and spell. When spelling, individuals rely upon the mental image of a word when phonological awareness and knowledge of phonics, vocabulary, and word parts and related words are not sufficient to correctly spell a spelling pattern within a word (e.g., *soap* not *sope*; *ticket* not *tickit*; *sailor* not *sailer*). These mental images of words, also known as mental orthographic images (MOIs), are stored in an individual's long-term memory after repeated exposure to them in print (Ehri & Wilce, 1982; Glenn & Hurley, 1993). Because the encoding or "mapping" process of spelling requires detailed attention to the individual letters that make up the spellings of words, the process of spelling—when done correctly using multiple-linguistic processes—facilitates the development of accurate and robust representations of words in long-term memory. Once established, these accurate and robust MOIs allow individuals to quickly recall and correctly spell words and word parts.

The reader also gains repeated exposure to printed words during the decoding process when decoding is correctly taught and practiced. Unfortunately, many readers do not develop adequate MOIs because they use inappropriate reading strategies, such as partial cue analysis, a process whereby the student guesses the identity of a word after decoding only the first letter(s) of the word. As a result, readers may develop an MOI where only the initial letter(s) are clearly stored (e.g., storing *tr\_\_* for *truck*). This can be problematic in decoding when a child attempts to activate an MOI when encountering words with the same initial consonants (e.g., *train*, *trunk*, *trap*). Consistent use of proper decoding strategies—combined with encoding that requires more detailed attention to the individual letters of words than required for reading—establishes clear and complete mental orthographic images of words in long-term memory.

Once firmly established, the MOIs allow for accurate spelling and automatic word recognition, reading fluency, and text comprehension.

## **Multiple-Linguistic Spelling Instruction**

Because spelling draws upon an individual's repertoire of phonological awareness, and knowledge of orthography, vocabulary, morphological and semantic relationships, and mental orthographic images, integrating multiple linguistic processes within spelling instruction is very important. As you will read later in this article, multiple-linguistic spelling instruction is more effective than traditional spelling instruction because this approach improves both spelling and word-level reading and may be more effective for improving decoding than traditional reading instruction. To become familiar with the multiple-linguistic model of spelling instruction, consider the following examples of the role of phonological awareness, and knowledge of orthography, vocabulary, morphological and semantic relationships, and mental orthographic images in the spelling of short vowel sounds.

### **Phonological Awareness: Segmenting Sounds**

To successfully spell short vowel sounds, a student needs adequate segmentation skills to divide a word into its component sounds. The student also needs to understand that every sound must be represented by at least one letter and that every syllable contains one vowel sound represented by one or more vowel letters. Short vowel segmentation errors most often occur when any short vowel sound is followed by the consonant sounds / r, l, m, n, ? / and when the short vowel *u* sound is preceded by the consonant sounds / b, p, t, d, g, k, d?, t? /. To facilitate learning, begin instruction with words in which the short vowel sound is not followed by the letters *r, l, m, n, ng, nk* and the short vowel *u* sound is not preceded by the letters *b, p, t, d, g, j, hard c, k, ch*. A student may struggle with segmenting sounds if she or he is familiar with the spelling of a particular word and thinks about letters instead of sounds during the segmentation task. In this case, it may be helpful to begin with nonsense words until the student fully understands the concept of segmenting a word into sounds and not into letters.

### **Phonological Awareness: Discriminating Sounds**

To successfully spell short vowel sounds, a student must be able to distinguish between similar vowel sounds. Provide ample practice to firmly establish a

student's ability to discriminate between vowel sounds. The most common perceptual confusions among short vowel sounds are: Short vowel *a* sound vs. short vowel *e* sound (*bat* vs. *bet*); short vowel *i* sound vs. short vowel *e* sound (*bit* vs. *bet*); short vowel *a* sound vs. short vowel *o* sound (*cap* vs. *cop*); and short vowel *o* sound vs. short vowel *u* sound (*cop* vs. *cup*).

The particular consonant sound that follows a vowel sound also affects a student's ability to perceive differences between vowel sounds. Vowel discrimination is most difficult when the vowel sound is followed by the consonant sounds / m, n / and is generally not possible when the vowel sound is followed by the consonant sounds / r, l, ? /. To facilitate learning, begin with words in which the vowel sound is not followed by the letters *m, n* and exclude all words in which the vowel sound is followed by the letters *r, l, ng, nk* when working on discrimination of vowel sounds.

### **Orthographic Knowledge: Letter-Sound Relationships**

When spelling, individuals rely upon their knowledge of sound-letter relationships and knowledge of letter patterns and conventional spelling rules to convert short vowel sounds to written form. Short vowel spelling errors may occur due to a reliance on a letter-name strategy. With this strategy, the student correctly hears the vowel sound but relates it to the name of a vowel that most closely resembles that sound. For example, when saying the vowel name *a*, the shape of the mouth and sound that is heard closely resembles that of the short *e* vowel sound. Thus, a student may correctly hear the short vowel *e* sound in a word like *pet* but spell the vowel sound with the letter *a* as in *pat*. A student using a letter-name strategy will benefit from explicit instruction in correct letter-sound relationships. Two common letter-name misspellings for short vowels are: *a* for the short vowel *e* sound (*pet* as *pat*), and *e* for the short vowel *i* sound (*bit* as *bet*).

There are several allowable spellings for each short vowel sound. For example, the short vowel *e* sound can be spelled with the letter *e* (*net*), but can also be spelled with the letter *a* (*many*), or the letters *ea* (*head*), *ai* (*said*), or *ie* (*friend*).

### **Orthographic Knowledge: Letter Patterns & Spelling Rules**

Although there are several allowable spellings for each short vowel sound, the short *a*, short *e*, and short *o* vowel sounds are usually spelled with their corresponding letters (e.g., *cat, net, pot*). Discovering and applying this

knowledge about spelling patterns can be an effective spelling strategy, especially for the beginning speller.

## **Vocabulary**

To correctly spell homophones containing short vowel sounds (e.g., *red*, *read*), the student must understand the effect of a word's spelling on its meaning and must establish a solid link between the meaning of the word and its printed form. To successfully spell homophones, a student needs explicit instruction in word meaning coupled with the development of mental orthographic images.

## **Morphological Knowledge and Semantic Relationships**

The student does not need to rely upon morphological knowledge and knowledge of semantic relationships to correctly spell short vowel sounds.

## **Mental Orthographic Images of Words**

The student must rely upon clear and complete mental orthographic images of words to correctly spell the short vowel sound if the sound is not spelled with its corresponding vowel letter (e.g., *head* not *hed*); if the word contains a word ending that is pronounced the same but spelled differently from another word ending (e.g., *bed* and *head*); and if the short vowel sound is followed by *r*, *l*, *ng*, *nk*. Pronunciation of the corresponding consonant sounds distorts the short vowel sound, leaving the student unable to rely on a sound-it-out strategy.

Appendix A contains example activities to teach each of these linguistic components for the short vowel *a* sound. [Click here](#) to link to a pdf file of Appendix A.

## **Expected Outcomes**

Because spelling and reading share the same underlying linguistic processes, and because spelling places greater demands on the underlying linguistic processes (i.e., requires more detailed attention to the individual letters of words than required for reading), it is reasonable to think that spelling instruction would lead to improvement not only in spelling performance but in reading performance as well. In fact, research shows that students receiving multiple-linguistic spelling instruction emphasizing phonological awareness, and

knowledge of orthography, vocabulary, morphological and semantic relationships, and mental images of words show significant gains in spelling performance *and* word-level reading (decoding), as well as reading comprehension.

One example of such research is a case study conducted using the *SPELL Spelling Performance Evaluation for Language & Literacy* assessment protocol to identify a fifth-grade student's specific linguistic deficits in the areas of phonological awareness, orthographic knowledge, vocabulary, morphological and semantic relationship knowledge, and mental images of words. SPELL (Masterson, Apel, & Wasowicz, 2002; Masterson, Apel, & Wasowicz, 2006) is a software assessment program that collects a sample of misspellings and performs an error analysis to determine the specific linguistic deficits that are interfering with that individual's spelling and reading. In this case study, the fifth-grade student was administered a paper and pencil version of the SPELL prescriptive assessment. The prescriptive assessment led to a differentiated instructional plan targeting orthographic knowledge and phonemic awareness skills. Multiple-linguistic instructional methods featured in *SPELL-Links to Reading & Writing* (Wasowicz, Apel, Masterson, & Whitney, 2004) were implemented in a 9-week intervention program. The results revealed clinically significant improvement in spelling performance; word-level reading ability (word attack and word identification) also improved without direct reading instruction (Kelman & Apel, 2004).

Another example is a classroom study conducted to assess the effectiveness of multiple-linguistic instructional methods implemented in two elementary classrooms. Before initiating the project, measures were made to document comparable spelling skills across students in both classrooms. Between October and December of the school year, Class 1 received the traditional school spelling curriculum. Class 2 received multiple-linguistic instructional methods featured in *SPELL-Links to Reading & Writing*. The results revealed that the students who received the instructional methods featured in *SPELL-Links to Reading & Writing*, targeting multiple linguistic skill areas, demonstrated statistically and clinically significant growth in their spelling abilities, while the class that received the standard school curriculum did not demonstrate measurable gains (Apel, Masterson & Hart, 2004).

More recently, Roberts & Meiring (2006) examined the reading, writing, and spelling competencies of first-grade students who received two different instructional methods for teaching phonics. Reading, writing, and spelling

abilities were measured at the beginning, middle, and end of first grade. Students were randomly assigned to one of two treatments designed to teach letter-sound relationships, and blending and segmenting of phonemes. In the first treatment group, children generated spellings for words, and in the other treatment group, phonics instruction was embedded in literature. The spelling treatment produced significantly better gains for spelling phonetically regular real and pseudowords, reading phonetically regular pseudowords, and written story length. The spelling instruction approach also was more beneficial for low-ability children's reading of connected text. There were no treatment effects on reading uncontrolled words in text. At the end of fifth grade, spelling-context children had significantly higher comprehension than did literature-context children.

These and other studies demonstrate the importance of integrating the multiple linguistic factors that contribute to spelling and reading development within spelling instruction. Many professionals have already discovered that phonemic awareness activities, such as phonemic segmentation, lead to improvements in spelling and reading. However, spelling and reading instruction, with a focus solely on phonemic awareness, will yield only limited improvement in spelling and reading performance. Professionals must go beyond phonological awareness instruction and address all linguistic aspects of spelling and reading within their curriculum, with an emphasis on the integration of all linguistic skills that underlie word-level reading and spelling—phonological awareness, orthographic knowledge, vocabulary, morphological and semantic relationships knowledge, and mental images of words. Students should be encouraged to use a repertoire of linguistic knowledge to read and spell. This requires professionals to become knowledgeable about the phonological, orthographic, semantic, morphological, and visual/orthographic underpinnings of English spelling, and be able to use that knowledge in an integrated manner as they instruct students.

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## References

- Apel, K., & Masterson, J. J. (2001). Theory-guided spelling assessment and intervention. *Language, Speech, and Hearing Services in Schools, 32*, 182-195.
- Apel, K., Masterson, J. J., & Niessen, N. L. (2004). Spelling assessment frameworks. In A. Stone, E. R. Silliman, B. Ehren, & K. Apel (Eds.), *Handbook of language and literacy: Development and disorders* (pp. 644-660). New York: Guilford Press.
- Apel, K., Masterson, J. J., & Hart, P. (2004). Integration of language components in spelling: Instruction that maximizes students' learning. In E. R. Silliman and L. C. Wilkinson (Eds.), *Language and literacy learning in schools* (pp. 292-315). New York: Guilford Press.
- Carlisle, J. F. (1995). Morphological awareness and early reading achievement. In Feldman, L. B. (Ed.), *Morphological aspects of language processing* (pp. 189-209). Hillsdale, NJ: Erlbaum.
- Ehri, L. C. (2004). SPELL-Links to reading & writing product sampler. Evanston, IL: Learning By Design. [www.learningbydesign.com](http://www.learningbydesign.com)
- Ehri, L. C., & Wilce, L. (1982). Recognition of spellings printed in lower and mixed case: Evidence for orthographic images. *Journal of Reading Behavior, 14*, 219-230.
- Glenn, P., & Hurley, S. (1993). Preventing spelling disabilities. *Child Language Teaching and Therapy, 9*, 1-12.
- Kelman, M., & Apel, K. (2004). The effects of a multiple linguistic, prescriptive approach to spelling instruction: A case study. *Communication Disorders Quarterly, 25*(2), 56-66.
- Masterson, J. J., Apel, K., & Wasowicz, J. (2002). SPELL: Spelling Performance Evaluation for Language and Literacy [Computer software]. Evanston, IL: Learning By Design. [www.learningbydesign.com](http://www.learningbydesign.com)
- Masterson, J. J., Apel, K., & Wasowicz, J. (2006). SPELL Spelling Performance Evaluation for Language and Literacy (2<sup>nd</sup> ed.; SPELL-2) [Computer software]. Evanston, IL: Learning By Design. [www.learningbydesign.com](http://www.learningbydesign.com)
- Roberts, T., & Meiring, A. (2006). Teaching phonics in the context of children's literature or spelling: Influences on first-grade reading, spelling, and writing and fifth-grade comprehension. *Journal of Educational Psychology, 98*(4), 690-713.
- Treiman, R., & Bourassa, D. C. (2000). The development of spelling skills. *Topics in Language Disorders, 20*(3), 1-18.
- Wasowicz, J., Apel, K., Masterson, J. J., & Whitney, A. (2004). *SPELL-Links to reading & writing*. Evanston, IL: Learning By Design. [www.learningbydesign.com](http://www.learningbydesign.com)