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Questions teachers ask about spelling

For a number of reasons, spelling is once again a significant concern among both the language arts community and the lay public. Much of the concern has to do with the perception that students are misspelling many more words in their writing than they used to—an observation that, apart from anecdotal reports, is difficult to document at a national level in the United States (Sabey, 1997). On the other hand, many school systems report that students' performance on standardized tests of spelling is poorer than in previous years. Parents are concerned about the misspellings they see coming home in their children's writing—a concern that exists in spite of "First Draft" being stamped at the top of the page.

Parents and many educators are concerned about invented or temporary spelling, fearful this will lead to a lifetime of poor spelling. They wish to see spelling books tucked under children's arms and brought home, a reflection of what they perceive to be the foundation of tried and true traditional educational values. Many teachers, however, share similar concerns. While they believe that some type of systematic spelling instruction is necessary, they are uncertain about the nature and degree of such explicit attention to spelling.

Of course, one might also observe that it has always been thus (Templeton, 1992). Spelling is so visible, so obvious, that it often assumes the role of a proxy for literacy and in that role is bound to generate controversy. Spelling has also been a flashpoint in the debate between more integrated, whole-language-oriented instruction and more structured, part-to-whole instruction. And inevitably, these concerns are often tied to political agendas.

Can research provide a reasoned if not confident response to these concerns? In both the laboratory and the classroom, researchers and teacher/researchers are suggesting that it can. Research in the following areas has yielded important implications for the learning and teaching of spelling: (a) investigations of the nature and development of word perception, (b) investigations of the development of spelling or orthographic knowledge, and (c) methodological investigations.

In spite of all the caveats one must offer when turning to methodological issues, it is nonetheless possible to derive some solid and perhaps reassuring implications for what we can do in the classroom. While we will not in this article explore the research into the nature and development of word perception, we do wish to note that this research complements in many ways the findings from research in the other areas.

Traditional and contemporary perspectives on spelling

In the past, because most people inside education and out believed that English spelling does not do a good job of representing the pronunciation of words, primary instructional emphasis was usually placed upon rote memory (Horn, 1969). Where rules seemed to work they were emphasized, but the rules were themselves many in number and often seemed to be honored in the breach as often as much as in the main. In recent years a more comprehensive understanding of the nature of English spelling has led to more promising instructional thrusts. More educators now understand that, while memory does play an important role in learning to spell, it does not play the *only* role (Henderson, 1990). Learn-

ing to spell should *also* be a process of coming to understand how words work—the conventions that govern their structure and how their structure signals sound *and* meaning (Berninger, 1994, 1995; Brown & Ellis, 1994; Read & Hodges, 1982; Templeton & Bear, 1992; Templeton & Morris, in press).

This reconceptualization of the role that spelling or orthographic knowledge can play in both writing and reading means that the learning and teaching of spelling cover a broader theoretical and practical terrain than in years past (Templeton, 1991). Instructional emphasis is placed on the exploration of *patterns* that can be detected in the sound, structure, and meaning features of words—as opposed to the single-minded focus on learning how to spell the 5,000-plus most frequently occurring words in writing or particular words that may be problematic for individual students.

In part, this understanding arises from a general consensus in the research community that the process of *writing* words and the process of *reading* words draw upon the same underlying base of word knowledge (Ehri, 1993; Gill, 1992; Perfetti, 1992; Templeton & Bear, 1992). The more students understand about the structure of words—their spelling or orthography—the more efficient and fluent their reading will be (Perfetti, 1992). Thus, orthographic or spelling knowledge is the engine that drives efficient reading as well as efficient writing.

Though gaining a foothold, this reconceptualization of spelling is still not widespread among educators. In fact, many teachers express concern that they do not have a strong foundation either in how to teach spelling or in the nature of the spelling system (Gill & Scharer, 1996; Henry, 1988; Moats, 1995; Morris, Blanton, Blanton, Nowacek, & Perney, 1995). This knowledge base may be as tenuous for the experienced teacher as it is for the novice. While many teachers may agree that spelling *patterns* should be the focus of instruction, teachers' knowledge of the nature and extent of these patterns often is limited, particularly as these patterns apply to *morphemic* or meaning-bearing elements in words (Moats & Smith, 1992).

There have been some efforts in recent years to address the need for a broader knowledge base with respect to spelling instruction; for example, in October 1992 *Language Arts* published a themed issue on spelling; *Primary Voices*, a publication of the National Council of Teachers of English (NCTE), had an issue dedicated to the teaching of spelling in November, 1996; and NCTE also sponsored a teleconference on the topic. But such efforts still do not reach most elementary and middle school teachers, and they often do not reflect the importance of the role that a more informed knowledge of the spelling system can play for teachers. Significantly,

these efforts often do not reflect the importance of pulling words out of the immediate contexts of reading and writing in order to examine and explore them for common patterns. This latter issue reflects the classic controversy in the field of literacy and language arts concerning the role of context in word learning—when does the context for word study cease to become meaningful and authentic? Is it when words are taken out of written context? Or is it when the examination of words outside of running text becomes dull, routinized, and lacking in active inquiry and exploration?

In an effort to broaden the current professional dialogue regarding spelling instruction, in the remainder of this article we will address teachers' most frequently asked questions about spelling. These questions have come from teachers in all contexts, preschool through university. We address them in a sequence that we hope provides a logical introduction to this important topic:

1. Why don't we just spell words the way they sound?
2. How *do* students learn to spell?
3. How should spelling words be selected and organized?
4. How do I determine my students' spelling levels?
5. Should I allow invented spelling? If so, for how long?
6. What types of instructional *activities* work best?
7. What type of spelling *strategies* should be taught?
8. How can I assess how my students are progressing?
9. How should instruction be adjusted for students with a learning problem in the area of spelling?

Teachers' most frequently asked questions about spelling

1. Why don't we just spell words the way they sound?

Because so many questions that teachers raise can be addressed by looking at the nature of the spelling system, we begin with a brief description of how the system represents sound and meaning. A timeless lament, the question "Why don't we just spell words the way they sound?" has arisen from generations of students and their teachers. T.S. Watt's poem "Brush Up Your English" (as cited in Taylor & Taylor, 1983) has become a classic of sorts, playing off of the different ways in which sounds can be spelled in English. It begins:

I take it you already know
Of tough and bough and cough and dough.
Others may stumble but not you,
On hiccough, thorough, tough and through... (p. 99)

As we'll see, however, what has been lost in a consistent letter-sound correspondence has been gained in the in-

creasing tendency to spell meaningful word parts consistently. Cummings (1988) expressed it simply: In English, spelling must balance a *phonetic demand* that "sounds be spelled consistently from word to word" with a *semantic demand* that "units of semantic content be spelled consistently from word to word" (p. 461).

English spelling did start out as primarily an alphabetic or phonemic writing system, representing sounds in a fairly straightforward left-to-right matchup. It still has a strong alphabetic foundation, as illustrated by words such as *mat* and *stop*. However, as a succession of languages brought an influx of new vocabulary into English over the centuries—Germanic, Scandinavian, French, Latin, Greek, and Spanish—the way these words were spelled in the original language was usually brought in as well. This had the inevitable effect of moving spelling away from its straightforwardly alphabetic, letter-sound foundation.

There are *patterns*, however, in English spelling. These patterns provide a level of consistency that operates within and between syllables, and they complement the alphabetic level in providing consistent information about how sounds are spelled. These patterns explain, by the way, the occurrence of letters that do not themselves stand for a sound in a particular word: Such letters usually signal the pronunciation of *other* sounds within the word.

To illustrate how these patterns operate, let's begin with the alphabetically spelled word *scrap*. Each letter corresponds to a sound or phoneme in English. But consider the word *scrape*. Unless we use a different letter to represent the *long a* sound in the middle of the word, we need to signal how this pronunciation differs from *scrap*. The *e* in *scrape* does this for us: The common VCe spelling pattern allows us to distinguish what would otherwise be ambiguous spellings—such as using *scrap* to spell both *scrap* and *scrape*.

Patterns that signal pronunciation—or pronunciations that signal spelling patterns—occur in more structurally complex words as well. For example, we distinguish the word *scrapped* from the word *scraped* by doubling the final consonant before adding the inflectional ending *-ed*. This consonant doubling feature of English spelling is widespread: It most often indicates that the preceding vowel is *not* a long vowel. When a long vowel *is* present, it is usually followed by a single consonant, as in *scraped*.

It is important to note that the phenomenon of doubling consonants or dropping *e*'s goes well beyond the case of adding suffixes to base words, as in *scrapped*/*scraped*. It also applies within polysyllabic words to which no suffixes have been added. Consider the words *snazzy* and *lazy*: The short vowel in the first

syllable of *snazzy* is kept short because it is followed by the double consonant that closes the syllable, while the long vowel in the first syllable of *lazy* is kept long because it is followed by a single consonant—the first syllable is left open, signaling a long vowel.

An awareness of these patterns helps students in both reading and spelling: When students encounter an unknown word in reading they can apply their knowledge of patterns to access the sound of the word. When students are writing and are unsure of a spelling, they can attend to the sounds they hear to generate the spelling. The traditional belief that there are so many ways to spell sounds that it is difficult to go from sound to spelling reveals a strictly alphabetic bias: As the groundbreaking research by Hanna, Hanna, Hodges, and Rudorf (1966) revealed many years ago, when the speller learns how patterns work the possibilities for correct spelling increase significantly because the speller has more information that can be brought to bear in order to generate the conventional spelling.

As have such luminaries as George Bernard Shaw and Theodore Roosevelt, one might argue that we should adopt a different spelling system altogether, one in which every sound has its own corresponding letter. Assume for a moment that we decided to do this: Whose pronunciation would we choose? For example, if we choose the standard British pronunciation the word that is presently spelled *park* might be spelled *pok* (/pahk/), or *pak* if we chose a variety of New England pronunciation. If we choose the midwestern pronunciation of *girl* we would spell it *girl* but perhaps *gull* if we chose a standard British pronunciation. Clearly, we can avoid some rather thorny territorial and linguistic battles by not trying *literally* to spell words the way they sound.

Perhaps the most important benefit from not literally spelling words the way they sound, however, is that we would lose the visual representation of meaning that is preserved among words that are members of a spelling-meaning family. The importance of meaning or morphological characteristics of English spelling was convincingly argued almost a century ago by a noted editor of the *Oxford English Dictionary* (Bradley, 1919) and re-emerged during the heyday of linguistic theory in the 1960s (C. Chomsky, 1970; N. Chomsky & Halle, 1968; Venezky, 1970). The morphological characteristics that are visually preserved in spelling reflect what Cummings (1988) has referred to as the *semantic demand* upon the spelling system: Units within words that represent meaning should be spelled consistently from one word to the next. Over the last two decades students' acquisition and understanding of this *spelling-meaning connection* (Templeton, 1979) have been investigated (e.g., Derwing, Smith, & Wiebe, 1995; Fowler & Liberman,

1995; Templeton & Scarborough-Franks, 1985). Note how the italicized spelling units in each of the word groups below remain the same across words, despite accompanying changes in sound:

<i>condemn</i>	<i>critic</i>	<i>please</i>	<i>similar</i>
<i>condemning</i>	<i>criticism</i>	<i>pleasant</i>	<i>similarity</i>
<i>condemnation</i>	<i>criticize</i>	<i>pleasure</i>	

These groupings illustrate the consistent spelling of meaning across base words and their derivatives. This consistency also occurs among Greek and Latin word elements, as in *judge/judicial/adjudicate* and *economics/ecology*. The consistent spelling of morphemic elements in English provides more than simply a helpful strategy for the writer; this consistency underlies the structural analysis skills that are applied when students encounter unfamiliar words during their reading as well (Aronoff, 1994; Derwing & Baker, 1986). This consistency, by the way, is an important reason why so many words are not spelled the way they sound.

Linguists describe these various characteristics of English spelling in different ways: alphabetic, orthographic, syllabic, morphemic. To capture these characteristics from an educational perspective, Henderson and Templeton (1986) referred to the different layers of information as *alphabetic*, *pattern*, and *meaning*:

- *Alphabetic* refers to the fact that there are a good number of words in English the spelling of which is primarily left to right, a fairly straightforward linear matching of letters and sounds.
- The *pattern* layer provides information about (a) sounds that a group or pattern of letters represents within a syllable—for example, the signaling of long vowels by silent letters; and (b) patterns across syllables, as in the closed VCCV pattern of *kitten* and *helmet* and the open VCV pattern of *pilot* and *hotel*.
- The *meaning* layer provides information through the consistent spelling of *meaning elements* within words, despite sound change, as in *solemn/solemnity* and *critic/criticize*.

2. How do students learn to spell?

The understanding of the alphabetic, pattern, and meaning layers in the spelling system develops over time and depends upon considerable experience with meaningful reading and writing. As with any other type of learning, learning about the spelling of words is *conceptual* learning and proceeds from a more concrete to a more abstract level of understanding and analysis. Online reading and writing are the conditions in which spelling knowledge is developed and exercised most fully. For most students, however, the explicit examination

and exploration of words outside of actual reading and writing are necessary.

Several researchers have described this process in *developmental* terms in which learning to spell entails understanding increasingly abstract relationships that begin at the level of individual letters and sounds, and progressively advance through pattern and meaning (e.g., Ehri, 1993; Frith, 1985; Henderson, 1990; Templeton & Bear, 1992). Other researchers have emphasized that this progression is not simply the application of qualitatively different levels of analysis at each stage, but also involves complex processes in which a number of different strategies are called upon throughout the learning process (e.g., Read, 1994; Snowling, 1994; Treiman, 1993).

Spelling begins in the extended period of emergent literacy during which children learn much about the forms and functions of print. This understanding lays the groundwork for moving into the exploration of the *alphabetic* layer of spelling. With their knowledge of the names of the alphabet letters and an emerging awareness of sounds within spoken words, children create or invent their spelling as they write. In English, consonants emerge first in children's invented spellings, because they are more salient acoustically and in terms of articulation: for example, I LK TO P KBL (*I like to play kickball*). Vowels emerge somewhat later: I LIK TO PLA KEKBOL. This sequence reflects English-speaking children's analysis of the way words are represented in print. That is, once children know what a printed word unit is and how it corresponds to speech (Morris, 1993), their theory of how spelling works is driven by an *alphabetic* expectation: Sounds within words are matched up with letters in a linear left-to-right fashion.

In contrast to the alphabetic layer, the *pattern* layer is more conceptually advanced because learners come to understand that spelling does not always work in a strictly left-to-right fashion; groups or *patterns* of letters work together to represent sound. For example, in order to understand how the "silent e" works in words such as *make*, learners must be able to do the following: skip to the end of the word and think in a right-to-left fashion, grasping the notion that a letter can in fact not stand for a sound itself but provide information about the sound of another letter in the word. This understanding means that children grasp that the vowel/consonant/silent *e* functions as a single pattern or unit. The most salient indicator that students have begun to make this conceptual advance from a linear alphabetic conception of spelling is the appearance of silent letters in their invented spellings to represent long-vowel sounds: WE TIDE THE GAEM (*We tied the game*). These spellings reveal that students conceptually grasp the pattern principle.

When letter patterns within single syllables are understood, learners come to understand *syllable* patterns. The foundation for this understanding is laid when students grasp the consonant-doubling/e-drop principle as it applies to simple base words and suffixes: *bat* + *ing* = *batting*, but *rake* + *ing* = *raking*. Somewhat later developmentally, this principle comes around again when students learn that it also applies *within* polysyllabic words, in the case of closed and open syllables: CATLE (*cattle*, the first syllable contains a short vowel and is closed by the double consonant, just as in *batting*) and STOLLEN (*stolen*; the first syllable contains a long vowel and remains open, just as in *raking*). Notably, as students learn those conventions that govern the base word plus suffix spellings, they are underway in their developing understanding of simple principles of word combination: how compound words are created and come to mean what they do, and how base words and affixes combine. This understanding in turn provides the foundation for grasping the role of *meaning* in spelling: OPPISITION and COMPISITION are corrected by relating each word to its base, *oppose* and *compose*, in which the pronunciation and spelling of the vowel in the second syllable become clear.

To an engaging degree, learners recapitulate the historical development of English spelling (Cummings, 1988; Invernizzi, Abouzeid, & Gill, 1994; Templeton, 1976). Over the course of several years they move from learning how spelling represents *sound* to learning how spelling represents *meaning*, and this was the course English spelling followed as well. The majority of spellings in Old English (approximately A.D. 450–1066) were straightforwardly alphabetic—letters matched sounds in a left-to-right manner as in *mus* and *hus* (present-day *mouse* and *house*).

The *pattern* feature was introduced in a significant way with the influx of French into English after the invasion by William of Normandy (the coastal region of France across the channel from England) in 1066. Over the next two centuries, French spelling significantly influenced the writing of English—as for example the vowel patterns *ou* in *house* and *mouse* (OE *hus* and *mus*) and *ie* in French loanwords such as *brief* and *relief* (Scragg, 1974). Notably, Middle English developed from this mixture of French and English.

Later, during the Early Modern English period (the 16th and 17th centuries), Greek and Latin word elements were infused into English in greater numbers and were combined and recombined to create a large number of new words, a vocabulary that primarily reflected the scientific advances of the time.

There are good reasons for this parallel between development within the individual learner and develop-

ment of the spelling system as a whole. The alphabetic strategy characteristic of Old English corresponds to the cognitive expectations of young, beginning readers and writers. As learners develop further their literacy skills through reading and writing, they assimilate words that include the spelling and meaning patterns that characterized words that came into English later, first with the influx of Norman French and later with the revival of interest in and use of Greek and Latin word elements. Eventually, the wide range of derivationally related words in the Greek and Latin component of the language becomes accessible through students' reading. Most of this segment of English vocabulary, comprising literally tens of thousands of words, also represents a more abstract conceptual domain.

From a developmental perspective, however, students by this time have the more advanced cognitive competence that allows them to explore these concepts and the multiple layers of information through which they are represented in spelling. Indeed, the common spelling of derivationally related words may be one of the most efficient and effective means of becoming aware of and organizing concepts that share a common underlying conceptual domain (Fowler & Liberman, 1995; Templeton, 1989). Consider, for example, how the common spelling reveals the common and perhaps surprising conceptual domain underlying the following words: *human*, *humanity*, *humane*, *posthumous*, *humus*, *exhume*.

3. How should spelling words be selected and organized?

As we have pointed out, most students do not discover the different layers of information and the corresponding sound and meaning patterns on their own. We assume, therefore, that it is necessary to take words out of running texts and organize them in ways that will facilitate awareness, understanding, and application of these patterns. How do we go about this selection and organization?

First, the words should be developmentally appropriate. They should reflect spelling features that students "use but confuse" when they write (Invernizzi et al., 1994, p. 160). Children who are alphabetic spellers will be using but confusing short-vowel spellings as well as several consonant blends and digraphs. Attempting to teach them long-vowel patterns, for example, would not be productive because the underlying word knowledge and conception of how the system works would not support memory for different long-vowel patterns. On the other hand, students who are using but confusing one-syllable long-vowel patterns *should* be examining such patterns. Attempting to teach these children poly-

syllabic words will not work because underlying word knowledge does not support memory for such words.

Second, the words should be organized according to spelling *patterns*: While younger students explore vowel patterns, for example, older students explore syllable patterns and spelling-meaning relationships. The latter include learning the simple combinatorial principles that govern the ways in which base words and affixes combine, as well as learning about the common meaning connection among words that share similar spellings.

Third, at the primary levels (Grades 1 through 3) the words should be known automatically as sight words in reading. At the intermediate levels (Grades 4 through 6) and beyond, while most words should be familiar to students through their reading, some *new* words may be included that are related in spelling and in meaning to the known words. This is the point at which teachers can direct students' attention to the morphemic aspects of words, because most students will not become explicitly aware of these spelling-meaning features unless they are pointed out. Indeed, most adults are not explicitly aware of these aspects (Fischer, Shankweiler, & Liberman, 1985; Fowler & Liberman, 1995).

Is there one place I can go to get the appropriate words for spelling, or do I have to find them myself? Because a number of contemporary published spelling programs purport to be developmentally based (Zutell, 1994), teachers should examine these programs, grade by grade, to see the extent to which they present features and patterns in a developmentally appropriate manner. If this is the case, then these published programs themselves can provide a ready source of words. In addition, a number of resources for teachers offer words organized according to pattern, and some have arranged these in a developmental progression (e.g., Bear, Invernizzi, & Templeton, 1996; Henry, 1996).

How many words should students be examining each week? Because primary emphasis should be placed on spelling patterns, there should be enough words to allow students the opportunity to discern one or more patterns. For learners in the late alphabetic stage—the latter half of first grade for most children—fewer than 10 words per week is appropriate. The words should be organized around common features or patterns, for example, consonant digraphs or the CVC short-vowel pattern. A few high-frequency words that are necessary for writing should be addressed beginning at this level as well. As learners move into the within-word pattern phase (roughly second and third grade), 10 to 12 words per week become the norm. From the syllable juncture stage on (fourth grade and beyond for most students), 20 words per week are standard. At these successive stages,

frequently misspelled words may continue to be added to the core list.

Students may also individualize their weekly lists by including particular words that they wish to spell. This can be highly motivating; these self-selected words can be words of particular interest to the students (dinosaur names, for example, are popular during a unit focusing on the earth's history) or words that continue to cause difficulty. Again, however, these words should not be the *only* spelling words the students have. Indeed, when spelling instruction is based exclusively on personalized lists that include only those words that each student is misspelling in his or her writing or on lists of frequently misspelled words, then students are inadvertently forced to focus on individual words rather than on spelling *patterns* that apply to large numbers of words. So, the best practice is to add a few self-selected words and frequently misspelled words to the core group of pattern words students will study each week.

4. How do I determine my students' spelling levels?

Just as reading instructional levels vary among students within a single classroom, so do spelling instructional levels (Horn, 1969; Manolakes, 1975; Morris, Nelson, & Perney, 1986). Determining the latter is important, because when students examine words that are at their appropriate developmental/instructional level they make more progress than if they attempt words and patterns that are at their frustration level (Morris, Blanton, Blanton, Nowacek, & Perney, 1995). It is true that for most students in a fourth-grade class the spelling instructional level will indeed be fourth grade; nonetheless, there will be some who are at a lower instructional level and some at a higher level.

Students' spelling levels may be determined by administering a qualitative spelling inventory, a series of graded lists with approximately 20 words per list (Schlagal, 1989) or a single list organized according to developmental levels (Bear et al., 1996). The inventory will reveal what spelling features students are using but confusing (Invernizzi et al., 1994) and also help teachers determine where their students fall along the developmental continuum of word knowledge. The results of these inventories may be expressed in two ways: in terms of grade level (Henderson, 1990; Schlagal, 1992) or in terms of developmental level (Bear & Barone, 1989; Bear et al., 1996). It is important to note, however, that regardless of criterion—grade level or developmental level—the results are equivalent. For example, a spelling instructional level of second grade corresponds to the *within-word pattern* stage; a spelling instructional level of fourth grade corresponds to the *syllable juncture* stage (Henderson, 1990; Henderson & Templeton, 1986).

5. Should I allow invented spelling? If so, for how long?

In a sense, invented spelling continues throughout our lives. We engage in it whenever we take a risk or have a go at a word about which we are uncertain (Cramer, 1998; Hughes & Searle, 1997; Wilde, 1992). We may forget whether *irrelevant* or *irrelevent* is correct, so rather than interrupting our writing to consult a dictionary we write down our best guess and know that we can check it out later.

The issue of invented spelling is of most concern, however, in the case of younger students. Among many parents and some state legislators, reaction against allowing invented spelling has been strong and often vehement. There are really two parts to the question of allowing invented spelling, however: (a) Should we allow young children to invent spellings as a means of developing phonemic awareness and getting them involved in meaningful writing from the start? and (b) How long should we allow invented spelling to go on before expecting children to learn conventional spelling?

First, the value of encouraging and allowing young children to invent their spelling has been strongly supported by well-conducted studies (Clarke, 1988; Ehri & Wilce, 1987; Huxford, Terrell, & Bradley, 1992; Read, 1986). When children attempt to represent their speech with letters, they are applying phonics in a truly authentic context. Along with other meaningful engagements with literacy—shared book experiences, rhyming games, categorization activities focusing on beginning sounds, and so forth—children become aware first of some individual sounds within syllables and then progress to full phonemic awareness, defined as the ability to attend consciously to both consonants and vowels within words.

How long do we let it go on before addressing conventional spelling? First of all, children become aware of the reality of conventional spelling quite early and will often ask teachers whether their invented spellings are right. So, while we do encourage them to “write down all the sounds you hear and feel when you say the word” (Bear et al., 1996, p. 40)—to continue to use words the spelling of which they’re uncertain but which they wish to use in their writing—we also proceed with instruction in how the system works. We can begin this exploration of conventional spelling when children have attained full phonemic awareness (the middle of first grade for most children) and are representing consonants and vowels in their invented spelling. At this level, in fact, phonics and spelling instruction are very closely aligned. As children learn about the short-vowel sound, for example, they can examine the spelling of several simple CVC pattern words that include this short vowel (*bag, sat, big, etc.*)

and can be expected to spell these conventionally in their writing.

6. What types of instructional activities work best?

Of the few methodological studies that have been conducted, none answers to everyone’s satisfaction the question of whether spelling is learned primarily through reading and writing or primarily through the systematic examination of words. This is probably the wrong question to pose, however. Rather, researchers and practitioners should be interested in the relative contributions of these different types of engagements with words. While this situation is not different than any other question in language arts (e.g., vocabulary development, grammatical usage), it is particularly controversial in spelling because to many educators the mere mention of instructional activities in the same company with spelling means an endorsement of the mind-numbing skill-and-drill paradigm of the past. We must keep in mind, however, that this reflects our own instructional histories: it does not necessarily foretell the instructional future.

What does emerge from the research is the suggestion that *some* examination of words is necessary for most students. Accurate, automatized knowledge of basic spelling patterns is at the heart of skilled reading and writing (Adams, 1990; Perfetti, 1992). Although such word knowledge is best developed through contextual reading and writing, many students require careful teacher guidance and much practice if they are to internalize foundational spelling patterns. Even those who appear to be good spellers can benefit from instruction. Again, one reason for this is that students are usually not explicitly aware of the nature and function of different types of orthographic information and features—the wide-ranging applicability of the consonant doubling/e-drop principle, for example, and the relationship between spelling and meaning patterns (Chomsky, 1970; Templeton, 1989). Becoming explicitly aware of these features enables students to extend their word knowledge in consequential ways (Derwing et al., 1995; Fischer et al., 1985; Fowler & Liberman, 1995; Goulandris, 1994). In fact, Fischer et al. (1985) observed that “spelling is not a skill that is fully acquired as a part of an elementary education” (pp. 438–439).

Bussis, Chittenden, Amarel, and Klausner (1985) described the brain as an “exquisitely designed pattern detector,” but they also pointed out that it “depends on adequate information to word efficiently” (p. 66). This is where explicit spelling instruction comes in. Explicit instruction involves teacher-directed as well as student-directed examination of words. Teacher directed does not mean teaching spelling rules—in fact, trying to teach spelling through rules is one of the least effective ap-

proaches one can take (Hanna et al., 1966; Horn, 1969). What teacher-directed learning *does* involve is organizing the examination of words in such a way as to guide students to an understanding of how particular spelling features and patterns operate. This type of exploration is effective because it requires an active search for *pattern* (Derwing et al., 1995; Goulandris, 1994; Henry, 1988). For example, when young students examine the different spelling patterns for the *long a* sound in single-syllable words they may come to the realization that the spelling does not occur randomly: if the *long a* sound occurs at the end of the word it will most often be spelled *ay* and only occasionally *ey*; if it occurs in the middle of the word it will most often be spelled *a-consonant-e* or *ai*.

Another example of explicit spelling instruction involves the teachers organizing the exploration of derivational patterns. For example, most fifth graders know the meaning of the word *solemn* but are likely to misspell it in their writing as SOLEM. By pairing the known word, *solemn*, with the unfamiliar word *solemnity*, therefore, we accomplish two objectives. First, the spelling of the known word is explained: Students can hear the pronunciation of the *n* in *solemnity*, and this is the clue to the spelling of the silent *n* in *solemn*. Second, students' vocabularies are expanded: Because they understand the meaning of *solemn* well enough to understand it in their reading and use it in their writing, they can learn the related word *solemnity*. In other words, if students know one word in a spelling-meaning family there is the potential to learn many other words in that same family.

Given the importance of spelling patterns, what types of instructional *activities* best facilitate detection and abstraction of patterns and, at the same time, reinforce memory for the spelling of specific words? Actually, a number of promising activities have recently been reported in the literature. *Word sorts* engage students in categorizing words according to sound, spelling pattern, and meaning (Barnes, 1989; Bear et al., 1996; Morris, 1982; Weber & Henderson, 1989). They can be teacher directed (closed) or student directed (open) (Bear et al., 1996; Cramer, 1998). For example, students in the within-word pattern phase of word knowledge could sort words according to vowel pattern; in such sorts there is always a miscellaneous category (represented below by a ?) for words that do not follow the target categories:

cat	make	car	?
mad	race	star	fall
flat	game	hard	ball
cap	place	mark	
grab	plate	park	
	rake		

Word sort activities involve students in *comparing*, *contrasting*, and *classifying* words—considering words from a variety of perspectives. Bear et al. (1996) emphasized the importance of comparing those words that do fit into a particular category with those that don't. This type of engagement with words will for most students lead to the abstraction of spelling patterns and the sounds to which they correspond.

Game-like formats such as board games and card games can also be effective if they focus on words that reflect spelling patterns. Word-building activities also facilitate abstraction of pattern: word wheels, flip charts, making words (Cunningham, 1995). Spelling or word study notebooks may be used to record, collect, and organize information about words and spelling patterns.

7. What type of spelling strategies should be taught?

The strategies that we can help students learn to support their spelling are derived from the type of thinking that occurs during word study activities. One of the most powerful strategies for determining the spelling of a word about which a student is unfamiliar is to try to think of a word that is similar in terms of sound or meaning. Psychologists have referred to this strategy as reasoning *by analogy*. We know that younger students as well as older ones are capable of this type of reasoning about words (Gaskins, 1992; Goswami, 1988; Treiman, 1993). This strategy should be modeled for students, however, because many will not discover it on their own.

For example, consider the student who has spelled *nature* as NATCHER. The teacher shows her the word *picture*, which she already knows how to spell. By directing the child's attention to the similar sound and spelling pattern in the known word *picture*, the teacher helps the child become aware of and remember the spelling of *nature*. At the same time, she is modeling a way of thinking about words: *If you're not sure about the spelling of a word, try to think of another word you know that may provide a clue*. Similarly, the common error among older students of misspelling an unaccented vowel, as in OPPISITION, is addressed by showing a word that is related in terms of spelling and meaning, *oppose*. Showing students that *opposition* is derived from the base word *oppose* reinforces the structural-meaning relationships that are preserved in the spelling system—as well as modeling a strategy for thinking about words.

A tried and true strategy for learning individual words is the *look, say, and write* strategy (Horn, 1969). Given our understanding of the role of analogy in learning to spell, however, to this sequence we would add *think*. Look, say, *think*, and write. As the student looks at and pronounces a particular word, he or she should

think about other words that may have the same spelling and/or meaning pattern.

Students also need to think strategically about what they already know about the spelling of a word and realize that this will help them focus more specifically on a particular error. They should be shown how to look at their misspellings in the context of the whole word. In the past, many teachers have inadvertently sent the message that, when a spelling error occurs, "the whole word is wrong." This is bad pedagogy because word knowledge is not an all-or-none affair. When a student misspells a word (RECK for *wreck*), we should first show her how much she *already knows* about the word—which is, most likely, most of the word. She has erred on just one or at most a couple of letters. By first reinforcing what is correct and then moving to what needs to be fixed up, we show students *how* to look at their misspellings. They need to realize that they have not missed the *whole* word but rather just a part of it—in effect, they already *know* most of the word.

While acknowledging the importance of learning spelling patterns, many educators suggest that teaching about them should occur incidentally, in the context of authentic reading and writing activities. While this practice should be encouraged, there are problems when it is endorsed as the *sole* means of promoting spelling development. First, the classroom teacher needs to have knowledge about both the spelling system and spelling development to do this, and we have already noted that many, perhaps most, teachers would admit that they do not feel confident of their expertise in this area. Second, most learners need adequate *time* spent examining words and patterns in order to lock in the spelling pattern, leading to the automaticity that serves both writing *and* reading. Though important, incidental teaching and learning are usually not sufficient for this level of processing.

8. How can I assess how my students are progressing?

Teachers can assess students' *application* of their spelling knowledge by examining the students' writing. This also provides information about what students are using but confusing and therefore need to study. The most straightforward assessment of students' spelling *knowledge* involves the administration of a good spelling inventory (see Bear et al., 1996; Morris, Blanton, Blanton, Nowacek, & Perney, 1995; Schlagal, 1992). Administering these inventories at the beginning and again at the end of the school year can give teachers a clear picture of the spelling gains made by their students. These periodic assessments can be included in students' portfolios, thereby providing dramatic evidence to students and parents of the progress over the course of the school year. Where standardized assessments of-

ten will not yield dramatic evidence of growth, these assessments will, because they can document growth within developmental levels. Morris, Blanton, Blanton, and Perney (1995) also found that student performance on 6-week review tests (administered cold, before study) provides an accurate, ongoing measure of spelling achievement.

Weekly spelling pretests and posttests also yield information, although ironically the Monday pretest is probably the more important measure. This is because the pretest tells the teacher how much prior knowledge individual students bring to the task of learning a list of 15–20 spelling words. The child who can spell 50% of the words *before* study will have a better chance of internalizing the weekly spelling patterns than a child who can spell only 10% of the pretest words.

Friday posttests also are important, providing a purpose for weekly study and review. However, as all teachers know, some students do well on the Friday posttest and then misspell the same words one week later in a composition. This often happens when students are placed at a frustration level (as opposed to instructional level) in the spelling curriculum. Through hard effort and brute memory, these students can score 90% correct on a weekly posttest; however, they are unable to internalize the underlying pattern knowledge—represented in the weekly word list—that leads to long-term spelling effectiveness.

9. How should instruction be adjusted for students with a learning problem in the area of spelling?

Research has shown that students who experience significant difficulty with spelling follow the same developmental course as other students, but do so at a slower pace (Worthy & Invernizzi, 1990). In such cases, it is critical to provide spelling instruction at the appropriate developmental level, regardless of the students' age and grade. Once the appropriate spelling instructional level is established—be it alphabetic, within-word pattern, or syllable juncture—instruction can be adapted by focusing on fewer words at a time, teaching spelling patterns in an explicit manner, and providing for copious amounts of practice and review.

Conclusion

Cummings observed, "It seems probable that a better understanding of the American English orthographic system would lead us toward a better teaching of literacy" (1988, p. 463). While educators have learned much over the past three decades about how the learner develops orthographic knowledge, our knowledge base with respect to the overall spelling system has lagged

behind. This has been costly for instruction because development must always be interpreted in terms of some end process or knowledge domain to be learned. To plan effective instruction, the teacher must know not only where the student presently is, but where he or she needs to go next; this calls for knowledge of the spelling system. The challenge ahead is to blend our understanding of the developing learner with a better understanding of the system to be learned. This can be done, and such an accomplishment could potentially improve not only the teaching of spelling but also the teaching of other literacy processes, including writing and reading fluency and vocabulary development. The spelling of words objectifies language and words in direct ways. An understanding of the system is beneficial for *all* learners, students and teachers alike.

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