Using Students’ Invented Spellings as a Guide for Spelling Instruction That Emphasizes Word Study

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Abstract

This article outlines a theory of developmental spelling that has evolved from qualitative research on children’s invented spelling. We show how an analysis of students’ invented spellings can inform teachers when to teach what. Examples of 3 students’ (ages 6, 8, and 14) invented spellings are provided, and an alternative approach to spelling instruction, called word study (word sorting, picture sorting, word hunting), is discussed within the context of several minilessons about examining words by sound, within-word patterns, and meaning.

When I wrote the original study, I was afraid people would dismiss it because there were only twenty children and they were exceptional in many ways . . . or because people would call the “misspellings” stupid and think that invented spellings took children off in the wrong direction, as in away from correctness. I never imagined that invented spelling, as an activity in and of itself, would become so accepted. [Read, 1991]

Immediately following a lecture entitled “Literacy and Language Variations,” including a discussion of invented spelling, adults of low literacy, and nonalphabetic writers, Charles Read fielded questions. It was as if the audience had waited an hour and a half to go back 20 years. All they wanted to talk about was children and invented spelling.

“How long should we let them invent?” asked a third-grade teacher in the audience.

“When do they stop inventing?” asked another.

“When should we teach them the correct spelling?” asked yet a third.

It has been 20 years since Charles Read first published his account of children’s pho-
netic logic behind their invented spelling (Read, 1975). It sparked something quite different from what he probably expected: a writing revolution in the primary classroom. As Morris (1989, pp. iii–iv) has written, “Few would deny the crucially important role played by developmental spelling theory in what has truly been a ‘writing revolution’ in the primary grades. Even with movement leaders like Graves and Calkins out in front, it is doubtful how far process-writing would have progressed in first and second grade classrooms had not teachers been given some kind of logical assurance that spelling is a developmental process . . . .”

Read, however, the pioneer explorer in invented spelling research, never dreamed that children’s invented spellings would be so thoroughly embraced. Nor did he expect that invented spelling would take the place of an organized approach to spelling instruction in elementary school.

The recent endorsement of whole language and process writing has occasioned reassessment of traditionally held assumptions concerning spelling instruction. The boring, decontextualized nature of spelling books and the meaningless drill associated with workbooks have been generally deplored as a waste of time. Entire school districts have eliminated the spelling book and encouraged, instead, developmentally appropriate activities that highlight a variety of contextually relevant word features: meanings, rhymes, alliteration, and the like.

As enriching as this contextualized alternative sounds, there are problems. Children develop literacy at different rates, so that the difficulty of the reading/writing context will vary considerably from child to child. Also, there is uncertainty as to the effectiveness of incidental word study “on the run.” As one teacher confided, “I know what I’m doing is not working . . . I still see the same mistakes in their writing folders even after I’ve discussed that particular word feature in the conference group” (P. Powers, personal communication, February 12, 1992).

Oddly enough, the fundamental insight of Charles Read’s findings has remained shrouded in a veil of philosophical acceptance. Experts acknowledge that learning to spell is a developmental process, exercised and advanced through purposeful reading and writing. The fundamental idea, however, that invented spellings provide a direct clue to a child’s current understanding of how written words work, and that direct instruction in spelling can be timed and targeted to this understanding, has, for the most part, been missed.

Invented spellings have been described as a window on a child’s developmental knowledge of words (Henderson, 1990). Even more, however, children’s invented spellings afford an understanding of the richness and layered complexity of our writing system. A close look at children’s spelling inventions provides a glimpse of the major principles of the writing system they are trying to master. Children and adults move from using but confusing elements of sound (GRUM/drum) to using but confusing elements of pattern (SNAK/snake), to using but confusing elements of meaning (PLANE/plain; BUCIAL/bushel). There is much more to be learned about the English writing system than simple letter-sound correspondences. Understanding the logic and complexity behind invented spellings can indicate to teachers when to teach what.

In this article we outline a theory of developmental spelling that has been validated through qualitative analyses of invented spellings in cross-sectional and longitudinal studies alike (Beers & Henderson, 1977; Bissex, 1980; Invernizzi, 1985, 1992; Schlagal, 1982, 1987). We show how an informed analysis of invented spellings can guide teachers in designing individually appropriate word-study activities that focus on spelling features that are appropriate to students’ current written language competence. Direct instruction in spelling through a technique called word sorting is presented within the context of meaningful reading
and writing in a process-oriented classroom.

**Developmental Spelling Theory**

When Charles Read first discovered the phonetic logic behind preschool children’s invented spellings, a window was opened on children’s developing concepts about how written words work. The view afforded an invaluable insight into the developmental nature of learning to read and spell. Children’s mistakes were not random errors made in wanton ignorance; they were, rather, rule-governed attempts to apply the alphabetic principle to the sounds of the English language. Since then, Read (1971), Beers and Henderson (1977), Bissex (1980), Henderson (1990), and others have examined hundreds of thousands of invented spellings from a developmental perspective. A comprehensive theory of developmental word knowledge has subsequently been described, tracing children’s developing concepts of written words across three nested tiers of English orthography: sound, pattern, and meaning.

As children grow in literacy proficiency, they appear to gain increasing control over particular features characteristic of each of these tiers of English orthography. In the first tier, for example, children grapple with features that have a one-to-one correspondence to sound. These features include consonants and vowels but do not include letters that do not have a direct correspondence to sound—silent vowel markers, for example. Armed with knowledge of the alphabet and an awareness that letters can be used to represent sounds, children apply the names of the letters quite literally to the sounds they are trying to write (GROM/drum, PEK/pink). This stage of word knowledge has been called letter name (Read, 1971).

At the second tier of written English, children realize that the system includes more than letters and sounds. Simple phonetic elements such as consonants, blends, and short vowel phonograms are correctly represented. Still, there is more. There are patterns that relate to sounds in an indirect way. Long vowels must receive some extra, silent letter, for example, and these silent partners form patterns. Snake, drain, weigh, child, and field all have silent diacritical markers that have no sound in and of themselves. Henderson (1990) called this stage of word knowledge *within word pattern*.

At the third tier of written English, children and adults enter a period of acquiring the meaning units contained in the spelling of polysyllabic words. It has been said that the spelling of English is “nearly optimal,” for it preserves meaning in a way that is obscured in speech (Chomsky & Halle, 1968; Templeton, 1983). The vowel in the second syllable of *competition*, for example, is spelled with an *e* not because of its sound, but because of its meaning; it comes from the word *compete*. Since many meaning units are contained in Latin- and Greek-derived roots and affixes that themselves form or join syllables, the orthographic features negotiated at this tier of written English revolve around syllables, stress, and vowel alternations of derivationally related pairs. These features appear to be negotiated in two steps: (1) how to accommodate the pattern-to-sound principle within and across syllables (AMAZING or PERRAIDING) and (2) how the shifting of stress across derivationally related pairs alters the quality of the vowel (photo, photographer, photographic). Researchers of invented spelling in the upper grades have described these two steps as *syllable juncture* and *derivational constancies* accordingly (Henderson & Templeton, 1986; Schlagal, 1987).

Sound, pattern, and meaning represent three broad principles of written English and form the layered records of orthographic history (see Table 1). As children learn to read and write, they appear to literally reinvent the system as it was itself invented. Letter name spellers invent the spellings of simple words just as the Anglo-Saxons did in 1000 A.D. Within word pattern spellers add a second layer of complexity, much as the Norman French did in the latter
<table>
<thead>
<tr>
<th>Principle of Written English</th>
<th>Historical Spellings</th>
<th>Students’ Spellings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anglo-Saxon</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sound</td>
<td></td>
<td></td>
</tr>
<tr>
<td>WIF (wife)</td>
<td>WIF (wife)</td>
<td></td>
</tr>
<tr>
<td>TODAEG (today)</td>
<td>TUDAÉ (today)</td>
<td></td>
</tr>
<tr>
<td>HEAFONUM (heaven)</td>
<td>HAFAN (heaven)</td>
<td></td>
</tr>
<tr>
<td>(Lord’s Prayer, 1000)</td>
<td>(Tawanda, age 6)</td>
<td></td>
</tr>
<tr>
<td>Norman French</td>
<td>Within Word Pattern</td>
<td></td>
</tr>
<tr>
<td>YONGE (young)</td>
<td>YUNGÉ (young)</td>
<td></td>
</tr>
<tr>
<td>SWETE (sweet)</td>
<td>SWETÉ (sweet)</td>
<td></td>
</tr>
<tr>
<td>ROOTE (root)</td>
<td>ROOTE (root)</td>
<td></td>
</tr>
<tr>
<td>CROPPES (crops)</td>
<td>CHOPPE (chop)</td>
<td></td>
</tr>
<tr>
<td>(Chaucer, 1440)</td>
<td>(Antoine, age 8)</td>
<td></td>
</tr>
<tr>
<td>Renaissance</td>
<td>Syllable Juncture</td>
<td></td>
</tr>
<tr>
<td>DISSCORD (discord)</td>
<td>DISSCORD (discord)</td>
<td></td>
</tr>
<tr>
<td>FOLOWE (follow)</td>
<td>FOLOWE (follow)</td>
<td></td>
</tr>
<tr>
<td>MUSIKE (music)</td>
<td>MUSSEC (music)</td>
<td></td>
</tr>
<tr>
<td>(Elizabeth I, 1600)</td>
<td>(Julian, age 14)</td>
<td></td>
</tr>
</tbody>
</table>

part of the fourteenth century. Syllable juncture and derivational constancies spellers invent conventions of syllables and morphemes much as was done in the Renaissance when English was first introduced to a Greco and Latinate vocabulary (Henderson, 1990). Longitudinal and cross-sectional research in invented spelling has shown that this progression occurs for all learners of written English in the same direction and varies only in the rate of acquisition (Invernizzi & Worthy, 1989).

By classifying invented spellings as experimentations with sound, pattern, or meaning, a “zone of proximal development” (Vygotsky, 1962) can be identified. Such a zone would be the tier of English orthography in which the child’s spelling reveals experimentation. By focusing instruction on that proximal zone, teachers can facilitate students’ progression toward a sophisticated written vocabulary. For students who are experimenting with sound, teachers can contrast aspects of the writing system that relate directly to the representation of sound. For students experimenting with pattern, teachers can contrast vowel patterns as they relate to sound. And for children experimenting with conventions of syllables and meaning, teachers can contrast the stability of base words, roots, and affixation across the variations in speech (see Table 2).

The writing samples in the next section were chosen from the writing-in-progress folders in various literature-based, writing-process classrooms. We analyze invented spellings in each writing sample according to developmental spelling theory. Following each analysis, we describe a systematic program of word study (an alternative form of spelling instruction) within the context of a minilesson (see Bloodgood, 1991; Templeton, 1991).

**Letter Name Spelling: Experimentations with Sound**

The following writing sample was produced by Catrell (age 7) midway through his first-grade year. It was taken from his journal.

I Wint tow hop Bac Rok and bEn KaM tow and We elomd it. [I went to Hump-
back Rock and Ben came too, and we climbed it.

As brief as this writing may seem, Catrell labored for 20 minutes over the entry. He repeated each word several times and mouthing sounds within words to arrive at his letter choices. To an observer, it was obvious that Catrell was wrestling with letter sounds. In writing the word WINT/ went, for example, Catrell quickly put down the W after whispering a /w/, then extracted the /i/ and repeated that sound alone 12 times before arriving at the letter choice l. This segmentation routine was repeated for every short vowel. Long vowel letters came more easily (KAM/came, WE) because the letter name contained the sound he needed. According to developmental spelling theory, Catrell is a late letter name speller experimenting with the sound elements of written English.

To identify Catrell’s zone of proximal development in spelling, we look for the middle ground between word features he correctly represents and those he omits. Once these known (correct) and unknown (omitted) features are established, we look for features Catrell is using but confusing in his inventions. Catrell knows his letters. Except for confusing c, k, and ck, he represents every consonant sound correctly. In addition, some sight words from his frequent reading appear intact (I, and, we, it). Clearly, Catrell does not need further work with initial consonant sounds.

To identify features that are beyond Catrell’s reach, we note spelling features that are absent. He does not use long vowel markers (KAM/came) or the past tense morpheme ed (CLOMD/climbed). These features, characteristic of the next two tiers of English (pattern and meaning), are presently beyond his zone of proximal development.

Now we look for the middle ground between what Catrell spells correctly and what he omits. Catrell’s inventions show
that he uses but confuses short vowels (WINT/went, HOP/hump). Even his c, k, and ck confusions (BAC/back, ROK/rock) are related to the common occurrence of these letters within short vowel families (see, e.g., back, sack, rock, dock). What knowledge he does have of short vowels is also applied to the long vowel in climbed (CLOMD). Catrell’s exaggerated segmentation routine has forced the pronunciation of an /a/ sound to follow the l. (See Beers and Henderson, 1977; and Read, 1971 for further discussion of the logic of the letter name spellers.)

Catrell approaches spelling as a phoneme segmentation task; he goes through the word sound by sound. It can be said that he has not yet chunked a rime unit, that is, the vowel and following consonant(s), to use in spelling. A teacher might help him to do so by calling his attention to the vowel and what follows. Attention to rhyming word families (e.g., pack, sack, tack) provides a stable chunk to be analyzed in the next tier of word knowledge—awareness of patterns. For now, however, Catrell’s zone of proximal development involves short vowels and their common phonogram families.

Catrell is not the only student in his classroom who is confusing common short vowels. By analyzing other children’s inventions according to features that are correct, features that are absent, and features that students use but confuse, teachers can identify groups of students with similar instructional needs.

The minilesson approach offers an ideal opportunity to provide guided instruction within a process-oriented reading-writing classroom. Other students experimenting with short vowel families might be grouped with Catrell for word study. Minilessons in word study could be rotated around three activities: picture sorting, word sorting, and word hunting in various texts.

Picture Sorting
Picture sorting is a categorization task that involves grouping items with similar sound features in their names (e.g., bat, boy; man, moon; sun, sock). Pictures can be sorted by initial consonant sounds, consonant blends or digraphs, rhyming families, or vowel sounds.

A picture sorting activity differs from a traditional phonics approach in several important ways. First, picture sorting works from the known to the unknown; students can already pronounce the names of the pictures. Second, picture sorting is analytic, not synthetic. Rather than building from the phoneme to the word, picture sorting begins with the word, then examines its parts. Picture sorting works with onsets (beginning consonant elements) and rimes (the vowel and what follows) (Invernizzi, 1992; Treiman, 1991). Third, picture sorting requires students to apply higher-level critical thinking skills in order to make categorical judgments. Sorting tasks involve determining similarities and differences, not rote recitation. Finally, picture sorting quadruples the number of exemplars a student would work with in most workbook activities and does so in a shorter amount of time.

All sorting tasks in a word study approach to spelling instruction involve comparing and contrasting word elements and grouping exemplars that go together separately from those that do not. Picture sorting is a particularly useful activity for students working within the sound tier of written English. Picture sorts must first be modeled by teachers as they work with students who have similar spelling needs. When comparing three short vowel families, for example, the teacher demonstrates with the following picture cards:

<table>
<thead>
<tr>
<th>top</th>
<th>pig</th>
<th>tack</th>
</tr>
</thead>
<tbody>
<tr>
<td>hop</td>
<td>wig</td>
<td>rack</td>
</tr>
<tr>
<td>stop</td>
<td>dig</td>
<td>track</td>
</tr>
<tr>
<td></td>
<td></td>
<td>black</td>
</tr>
</tbody>
</table>

Catrell’s teacher gathers his team together for a minilesson on sorting by sound. She begins by modeling the categorization of pictures of things that have the same short vowel sound, emphasizing the rime

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unit of each picture. For the picture of a tack, for example, the teacher removes the t from tack and says “ack”; then she removes the final /k/ from ack to arrive at the short a. The teacher contrasts this word family with different short vowel sounds, short o or short i, for example. Later, students are given several cards of their own to place in contrasting categories. Children are asked to say the name of the picture as they place it in the column and are guided to correct placement as necessary. At the end of this guided activity, teammates are paired to resort a larger stack of picture cards independently.

Word Sorting

On another day, Catrell’s team meets for a word sorting activity. Word sorting is similar to picture sorting except that printed word cards are used (Morris, 1982).

Learning to spell is a process of making associations between the spelling patterns of words and their pronunciations. Students cannot learn these associations if they cannot pronounce the words. In this instance, the teacher has selected words from ones Catrell and his teammates have actually read and written. However, the students may or may not be able to read all of the words out of context. For this reason, Catrell’s teacher first makes sure that students can read most of the words to be sorted.

As in the picture sorting routine, the teacher first models the word sort. Following the demonstration, she guides students in sorting written words into contrasting categories and again directs children toward correctness as necessary. After this guided practice, children are paired for independent sorting. Students might later record these sorts into corresponding columns in their word study notebooks.

<table>
<thead>
<tr>
<th>ack</th>
<th>ick</th>
<th>ock</th>
</tr>
</thead>
<tbody>
<tr>
<td>sack</td>
<td>sick</td>
<td>sock</td>
</tr>
<tr>
<td>tack</td>
<td>Rick</td>
<td>block</td>
</tr>
<tr>
<td>pack</td>
<td>pick</td>
<td>clock</td>
</tr>
<tr>
<td></td>
<td>lick</td>
<td>stock</td>
</tr>
</tbody>
</table>

Word Hunting

Word hunting is an outgrowth of both picture and word sorting activities and provides a natural bridge between spelling, writing, and reading. The most fruitful source for word hunts consists of texts the students have been reading and writing. Catrell’s team, for example, has been reading various forms of poetry. By writing a poem on chart paper, Catrell’s teacher is able to model a search for rhyming words that belong to similar short vowel families. Since Catrell and his teammates have been focusing on the ick, ack, and ock families, the teacher chooses a playground rhyme with three such exemplars.

Miss Mary Mack, Mack, Mack,
All dressed in black, black, black,
With silver buttons, buttons, buttons,
All down her back, back, back.

Line by line, the teacher guided Catrell and his teammates in locating the words that fit this phonogram family and classifying them in columns accordingly. Next, the teacher directed students back to their own texts to find additional exemplars. Finally, they checked their writing folders to find words they had used with these short vowel sounds. As students called out words in the group, Catrell’s teacher wrote them on her chart paper in four columns: short a, short o, short i, and miscellaneous. The miscellaneous column included exemplars that did not fit the sounds of the sort.

Within Word Pattern Spelling: Experimentations with Patterns

Russell adds written passages daily to his writing folder. Unlike Catrell, Russell does not labor over phonetic representations. Instead, his spellings flow smoothly from his pencil, reflecting the thoughts he intends to convey in his writing. The words he does not know how to spell do not cause him to hesitate much—he invents spellings for those words, using his strong knowledge of
patterns and sounds. Russell is a third grader who is in the pattern tier of word development. His writing reflects what developmental spelling theorists have termed within word pattern understandings about written English.

yesterday Berend and I went to Meadow creek. We saw lot's of tadowls. I cauth the most of them. I also cauth a cray Fish. I let afew go. We by axadnt let the cray Fish go. I tried to cach him agan but insted He pincht me. I shook him off. But I was sad that I let him go because I Wanted to see how big He was.

Soon it was time to go. Berend took us home. But we had to leve without Max my Cat. My dad had to get up a 12-clock midnite to get Max from one of our na-
ber's because he was crying.

Russell's spelling clearly shows the features he needs to work with next to improve his word knowledge. His writing indicates features he knows (consonant elements and most short vowels), those he is not yet spelling completely (polysyllabic words), and those he is using but confusing (vowel patterns). The inventions in this writing sample show which features Russell is ready to examine: (1) vowel patterns (NABORS, MID-
NITE, LEEV, INSTED, CACH, CAUTH, TADOWLS) and (2) ed endings (PINCHT,
TRIYED).

The minilesson for within word pattern spellers must build on the tier that comes before it. The sound principle of written En-
glish is still very much at work. Now, however, an additional layer of abstraction has been placed on the alphabetic base so that spellers must examine patterns in relation to the sounds that they represent. Following the three word study activities described for Catrell, Russell (and other students who spell like him) could begin with what they know (sounds), then move to what they are exploring (patterns).

The picture sort for the within word pattern speller might contrast short and long vowel sounds. Using picture cards, Russell's word study group can begin to contrast vowels that do say their letter name with those that do not. This focuses aural attention on the part of the word to be examined—the vowel and the consonants that follow. Once they have identified the sound of focus, students at this tier of word knowl-
edge can move quickly into sorting written words by sound and pattern.

Sorting at two levels of awareness (sound and pattern) is not easy and requires considerable guided practice. Experienced practitioners of the word sort technique have found it helpful to accomplish this goal in a two-step sort. The first step re-
quires a sorting by sound. Thus, short e words are put in one column, long e words in another. Some children are able to do this more easily than others. For those who are having difficulty, words are subdivided into rime units as described in the picture sorting task. The second step requires a further analysis of each sound group into pattern. A two-step word sort for long and short vowel patterns might look like this:

<table>
<thead>
<tr>
<th>Sorting By Sound</th>
<th>Sorting By Pattern</th>
</tr>
</thead>
<tbody>
<tr>
<td>bet</td>
<td>week</td>
</tr>
<tr>
<td>fed</td>
<td>week</td>
</tr>
<tr>
<td>less</td>
<td>week</td>
</tr>
<tr>
<td>nest</td>
<td>week</td>
</tr>
<tr>
<td>spent</td>
<td>week</td>
</tr>
<tr>
<td>shed</td>
<td>week</td>
</tr>
<tr>
<td></td>
<td></td>
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</tr>
</tbody>
</table>

By distributing this kind of practice in sorting words by sound and pattern in a di-
rected group setting, then again in independent and cooperative activities in pairs, the teacher allows students to explore the predominant patterns of the English vowel system in a discovery approach to spelling instruction.

Russell's spelling inventions also dem-
onstrate confusion over basic consonant patterns associated with long and short

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vowel sounds (CACH/catch). The tch versus ch pattern in words such as notch or roach is one such consonant pattern in the rime unit that is predetermined by the vowel. Sorting words spelled with ch and tch into three groups by sound might generate a three-column word sort like this:

<table>
<thead>
<tr>
<th>catch</th>
<th>coach</th>
<th>lunch</th>
</tr>
</thead>
<tbody>
<tr>
<td>match</td>
<td>peach</td>
<td>belch</td>
</tr>
<tr>
<td>ditch</td>
<td>beach</td>
<td>munch</td>
</tr>
<tr>
<td>scotch</td>
<td>roach</td>
<td>punch</td>
</tr>
<tr>
<td>fetch</td>
<td></td>
<td></td>
</tr>
<tr>
<td>notch</td>
<td></td>
<td>hunch</td>
</tr>
</tbody>
</table>

A second round to sort out patterns in the miscellaneous column will result in two additional categories of pattern: nch and lch. Much and such and rich may end up as truly miscellaneous, or as exceptions to be remembered in the otherwise stable pattern-to-sound rule.

Inflectional issues form the second category of Russell’s spelling inventions. One spelling convention that is causing Russell some confusion is the spelling of words that end in y when the ed ending is added (TRIYED). A useful instructional technique that could be used to help students learn this feature is having them look at many words that use the y ending and letting students develop their own hypotheses about the variance involved. Teachers can also facilitate such learning by using search tasks such as the word hunt we described. For example, the teacher asks students to look in their own reading, literature logs, or writing folders to find examples of the targeted feature, words that end in y. A word hunt through San Souci’s Talking Eggs (1989), for example, would produce the following exemplars: lady, ladies, carry, carried, moons, shady, rubies, dainty, raggedy, and others. Students can note these exemplars in word study notebooks, grouping them as they do so. This can be an individual activity, then a group or paired activity, and, finally, a class activity with students contributing their own information to what has been already collected by the group. When the instructional activity is completed, students can be instructed to look back over their own writing folders to correct any errors with that particular pattern.

The morphemic ending ed is another good example of a spelling principle that many students confuse in their writing until they have been given numerous examples to examine. The ed ending makes three different sounds, depending on the word to which it is attached. The words played and jumped, for example, are both one-syllable words that end in /d/ and /t/ sounds, respectively. The word batted, however, is a two-syllable word ending in /id/. The pronunciation of these differences comes fairly readily to native speakers, but the spelling provides another challenge. Russell spelled pinched as PINCHT, using t to represent the ed morpheme, yet he spelled tried as TRIYED. Inconsistency is the clue to a principle he is ready to study.

It would be valuable for Russell’s group to make a deck of cards containing words with ed endings, pronounced /id/, /d/, and /t/. With three exemplar cards placed on the table, representing these three sounds, and using words from Russell’s (or another student’s) writing, the teacher pronounces the words and the students decide under which column a word fits. Word cards are placed face down under the selected exemplar. After pronouncing the words, students turn the cards over to discover the actual spellings. They will discover for themselves that the /d/ sound is spelled with an ed, as are words ending in /t/ and /id/ sounds. This, then, is a guided lesson in the morphophonemic principle of the past tense ending.

The activities described, which are designed to address the vowel pattern principles that provide the predominant explanation for Russell’s inventions, all connect reading with writing in the classroom. Russell also misspelled longer words, leaving a vowel out of the polysyllabic word accident (AXUDNT). This is a signal to the teacher that he is ready to work with stress, perhaps
tapping out syllables as he pronounces words and becoming sensitized to syllabi-
cation. Until the teacher sees that Russell is
consistently putting vowels into his poly-
syllabic spellings, however, it would be
premature to try to teach him those elements.
The closeness of the child’s spelling to con-
vention must be the teacher’s guide. This,
then, is the forward movement of spelling
development. Exercised in writing, rein-
forced and recognized in reading, children’s
spelling is the window that allows the
teacher to see their advancing knowledge
of how words work.

Upper-Level Spelling:
Experimentation with Meaning

Children advance to the upper stages of
word knowledge, the meaning tier, in direct
proportion to their tacit understandings of
the two tiers before. That is, as they have
internalized the principles of pattern and
sound, they can use the information they
have learned about orthography as a guide
for spelling polysyllabic words. The mean-
ing tier is described by developmental spell-
ing theorists as syllable juncture, the ad-
vance toward making up syllables in
words as spellings change to accommodate
prefixes and suffixes, and derivational con-
stants, the advanced understanding of
root constancies as the meaning principle
underlying written English.

The following writing sample is from
Tasha, a sixth grader.

If I could be the manager of the cafeteria
at Linkhorne Middle School, I would
make some awesome changes. The in-
stalation of a sound system would by my
first decision. The kids could rotate
bringing there own choice of music.
Then I would make radacle changes in
the menu like we’d have hamburger and
fries and no rootine school menues. Then
I’d send evnations to Christian Slater
and Luke Perry to join us for lunch. If
they acept I’d get the Best Manager of
the Year Award!

As with Catrell and Russell, Tasha’s writing
folder contains the information her teacher
needs to design instruction that would be
optimal for Tasha and her peers. The
teacher needs to be able to see Tasha’s spell-
ings not as errors but as inventions that sig-
nal the next move toward correctness that
Tasha needs to make.

Tasha shows that she has a free-flowing
writing style. She uses polysyllabic words
as she writes, and she probably reads many
polysyllabic words every day. ROOTINE/
routine, ENVATATIONS/invitations, RA-
DACLE/radical, and DECISION/decision
are inventions that indicate her growing
ability to use vowels and the confusion that
results when she tries to spell words of two
syllables or more. These inventions revolve
around the pattern principle of the tier be-
fore. The spellings are compounded, how-
ever, by her ever-increasing vocabulary and
the complications involved with the Latin-
ate root system. DECISION/decision, EN-
VATATION/invitation, and INSTALA-
TION/installation are words whose
spellings rely on the meaning of the root or
base word. Tasha needs to be directed
through word study at this level to examine
such comparisons and solidify her under-
standings.

Prefix, suffix, and root typically have
been presented by teaching each morpheme
separately and then showing how these ele-
ments combine (dis [reverse] + able [to
do] + ity [noun] = disability). However, affi-
xation is more than the summing of the
parts to form the whole. Affixation interacts
with and modifies the other tiers of written
English. Consider, for example, Tasha’s
spelling of the second syllable in the word
invitation (ENVATATION). The addition of
the suffix ion causes a shift in the stress
across syllables, thus changing the quality
of the vowel from long (invite) to schwa
(invitation). A search for alternate forms of

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root words produces a word study notebook full of similar vowel alternations in derivationally related pairs. Many of Tasha’s inventions show that she is using but confusing this stable and predictable aspect of root constancies (see Templeton, 1983).

Assimilated prefixes offer yet another reason why an additive approach to the study of affixation and root is inadequate. Tasha’s spelling of accept (ACEPT) shows her lack of understanding of how roots can affect the spelling of prefixes. Accept and assemble have the same Latin prefix, ad; in the English spelling, the d has been assimilated to the first letter of the root. More work can be done in this area by having students compare words with easily confused prefixes, focusing on their own inventions. Since Tasha spelled invitation with en, she might search for words that begin with en and compare them to those that do not: Tasha’s word study notebook might look like this:

| enclosed | incredible |
| enable   | illegible  |
| enact    | irresponsible |

Besides interacting with sound (pronunciation) and spelling pattern (assimilation), affixation is an obvious determinant of meaning and use. By examining the spelling of words by part of speech, students and teachers create a natural bridge between spelling and the language arts. Students discover through sorting words by affixes that they have also sorted words by their part of speech. The ar suffix of spectacular, the le ending as in spectacle, and the ate form of speculate separate words into adjective, noun, and verb forms, respectively. Unaccented final syllables present an opportunity to study spelling in the larger context of language arts. Tasha’s writing sample shows that she consistently confuses these elements (MANAGOR, RADACLE, MUSICK). Tasha’s team leader recorded the following groupings of er, ar, or that students found in that week’s literature logs:

- mayor
- popular
- faster
- narrator
- circular
- cuter
- senator
- regular
- taller

The students concluded that the spelling of words with er, ar, and or endings is determined by their meaning and use.

**Conclusion**

Some children do not need the aspects of written English we have discussed brought to their attention. Immersion in written words in meaningful reading-writing contexts is all they need. These lucky few acquire knowledge of how written words are spelled tacitly through reading and writing.

For most students, however, learning to spell is not that easy. And all too frequently, the words children encounter in texts exceed the limits of their orthographic understanding. Teachers must reduce the variance between these students’ orthographic awareness and conventional spelling forms. Teachers can do this, not by reducing the variance of word features in text (for to do so is to violate the integrity of language), but by reducing the variation in relation to a student’s present knowledge. This can be done through a systematic study of word features carefully selected to match the developmental word knowledge of the student, a proximal zone identified through interpreting the student’s invented spellings.

Many aspects of word study we have described here are characteristic of direct instruction (Rosenshine, 1986). The teacher models comparing and contrasting routines and demonstrates categorization tasks. Students are supervised closely as they attempt similar routines and are guided toward correctness. Teacher-directed activity is gradually released to student control, and practice is distributed through various independent and cooperative-group formats. Spelling features characteristic of a given tier of written English are recycled later in more difficult orthographic environments as students acquire a more sophisticated reading vocabulary. However, im-
Important differences between direct instruction and the methods we advocate are worth noting.

Teaching is not telling (William James, 1899/1958). Teachers cannot teach students how to spell by telling them the rules, no matter how explicit teachers try to make rules. What the teacher can make explicit is what a student already knows, and the teacher can compare this to what the student is trying to spell. Students must have the opportunity to examine, manipulate, and make decisions about words according to categories of similarities and differences. It is up to teachers to direct students' attention to a particular contrast and to create tasks that require students to do so.

The human mind naturally seeks to find invariance across variation. A word study approach to spelling instruction reduces the diversity in English orthography in relation to the present and tacit knowledge of a student. At the same time, enough variation is left for students to discover the critical contrast. In this way, teachers can provide some direction yet allow students to discover spelling patterns for themselves. Word study, an examination of words gleaned from reading and exercised in writing, is a discovery approach to the principles of English spelling. It is informed and directed by the developmental word knowledge of the student.

References


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