

Best Practices in Spelling Instruction: A Research Summary

Abstract: This review of the spelling instruction literature identifies empirically-validated methodologies that effectively teach students to be accurate spellers. Phonemic, whole-word, and morphemic approaches to spelling instruction are described. The importance of Direct Instruction components including sequenced lessons, cumulative review, distributed practice, and systematic error correction are also discussed within the context of spelling instruction. In addition, research comparing two spelling curricula, *Spelling Mastery* (Dixon & Engelmann, 1999) and *Spelling Through Morphographs* (Dixon & Engelmann, 2001) are presented.

Has the importance of teaching students to spell accurately been lost in the age of computers and spell-checkers? Should spelling instruction be considered marginally important in schools today? The practices associated with traditional approaches to spelling instruction suggest that schools and teachers might place less value or importance on spelling as compared to other academic content areas (e.g., reading and math).

Perhaps the poor performance of students taught using these traditional spelling approaches has left schools and teachers disenfranchised with the idea of teaching spelling skills directly. Further, the conventional wisdom regarding the

written English language is that spelling patterns simply make no sense. Many English words are not spelled like they sound or have irregular spellings. Given this perception regarding the difficulties surrounding spelling, one should not wonder at the numbers of children and adults who reportedly have trouble with spelling (Dixon, 1993).

Despite what people may believe about the difficulties inherent in spelling instruction, the written English language does conform to predictable patterns, and more importantly, those patterns can be taught directly to students. Extensive research in the area of spelling (e.g., Collins, 1983; Dixon, 1991; Graham, 1999) has led to the development of evidenced-based approaches to spelling instruction (e.g., *Spelling Mastery*, *Spelling Through Morphographs*, Write-Say Method, and *Add-A-Word Spelling*) that effectively teach students to spell accurately despite the complexity of the English language. Further, in their reliance on research-based principles and practices, these spelling curricula are distinct from many other approaches to teaching spelling. In particular, *Spelling Mastery* and *Spelling Through Morphographs* have demonstrated substantial effects on the spelling development of children (e.g., Darch & Simpson, 1990).

This paper will summarize the research literature on spelling instruction and will highlight the most promising practices for teaching stu-

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dents to be better spellers. Three major spelling approaches will be discussed. These include the phonemic, whole-word, and morphemic approaches to spelling instruction. Features of each approach will be described as well as how each approach is used in research-validated spelling curricula. Several other empirically-validated components of these curricula will also be described. In addition, research comparing *Spelling Mastery* and *Spelling Through Morphographs* to other spelling curricula will be summarized.

Method

The literature examined in this review was identified through computer searches of the ERIC, PsychInfo, and Education Abstracts databases. Major descriptors included: (a) spelling, (b) research, (c) spelling instruction, (d) evaluation, and (e) *Spelling Mastery*. Initially, over 609 articles related to spelling instruction were identified. This number was reduced by reading the abstracts for each of these articles and selecting only those articles that included research data (i.e., program descriptions and position papers were excluded). Further, studies that did not directly relate to spelling curricula or instructional approaches were not included. In addition to the database search, article titles from 12 educational or psychological journals were searched from 1997 to 2001 for articles related to spelling instruction not identified through the computer search. Journals searched included: (a) *Annals of Dyslexia*, (b) *Child Development*, (c) *Education and Treatment of Children*, (d) *Effective School Practices*, (e) *Focus on Exceptional Children*, (f) *Journal of Behavioral Education*, (g) *Journal of Educational Research*, (h) *Journal of Experimental Child Psychology*, (i) *Journal of Learning Disabilities*, (j) *Learning Disability Quarterly*, (k) *Reading Improvement*, and (l) *School Psychology Review*. An ancestral search (i.e., survey of reference pages) was conducted for the articles identified through the other search strategies. Combined, these strategies produced

18 articles for review. Several books, curriculum guides, and literature reviews were also reviewed in preparation for this research review.

Research Findings

Phonemic Approach

Understanding the relationship between letters and their corresponding sounds is an important skill for successful reading and spelling performance. Treiman, Cassar, and Zukowski (1994) found that for children as young as kindergarten, the letter-sounds of words play an important role in children's spelling skills. Further, Waters, Bruck, and Malus-Abramowitz (1988) found that in general, children have less difficulty spelling words that are based on predictable letter-sound relationships.

Within the context of reading, letter-sound correspondence (also known as phonemics) allows students to identify the sounds that correspond to the written symbols (letters) in printed reading passages. Conversely for spelling, students identify the written letters that correspond to the spoken sounds. In a meta-analysis that reviewed 1,962 research articles on phonemic awareness, the National Reading Panel (NRP) reported to Congress that teaching phonemic awareness exerts "strong and significant effects" on children's reading and spelling skills, with those effects lasting well beyond the end of training (National Reading Panel, 2000). Many words in the English language have regular phonemic patterns. Predictable patterns for regular words allow students to spell these words solely on the basis of their letter-sound relationships. For example, the word *hat* has three sounds /h/, /a/, and /t/ and can be correctly spelled using the three letters (*h*, *a*, and *t*) that correspond with each of those sounds.

Spelling curricula that use explicit instruction in the letter-sound relationship to teach high frequency regular words have demonstrated effec-

tiveness teaching students to spell accurately. The NRP found that systematic phonics instruction boosted the spelling skills of at-risk and typically developing readers as well as students from across the socio-economic spectrum, from low to high SES (National Reading Panel, 2000). *Spelling Mastery* is one example of a spelling curriculum that explicitly teaches the letter-sound relationship for high frequency regular words. Initial lessons in *Spelling Mastery* focus on teaching students letter-sound relationships directly. Even after students achieve mastery of phonemics, *Spelling Mastery* continues to provide opportunities to practice those skills while learning more difficult content.

Emphasizing the importance of phonemic awareness, Beers, Beers, and Grant (1977) recommended that students have at least 1 year of instruction in a systematic phonics-based program to develop skills related to letter-sound correspondence. Furthermore, because of the importance of phonemic knowledge for spelling, they argued for postponing spelling instruction until students had received a year of instruction in phonemics. Even curricula that do not explicitly teach letter-sound correspondence can address the importance of this foundational skill. Although lessons in *Spelling Through Morphographs* do not explicitly teach students phonemics, the importance of those skills is acknowledged by requiring that students pass an initial placement test to demonstrate mastery of the letter-sound relationship. Students who have not mastered phonemics need basic instruction in those skills.

Both *Spelling Mastery* and *Spelling Through Morphographs* address the importance of teaching letter-sound relationships by integrating them into a phonemic approach to spelling instruction. Rather than postponing spelling instruction, these curricula directly assess and teach letter-sound relationships. This instruction will enable them to spell many high frequency regular sound words.

Whole-Word Approach

The phonemic approach can be used to spell a large number of regularly spelled words (i.e., words that are spelled just like they sound such as *hat* and *stop*). Unfortunately, not all words in the English language can be spelled correctly using letter-sound correspondence. Those that cannot be spelled by applying general spelling conventions are said to be irregularly spelled words. Examples of irregular words include the words *yacht*, *straight*, and *friend*. These words cannot be spelled correctly by sounding them out. To teach irregularly spelled words, a different instructional strategy is required.

Whole-word approaches to spelling instruction have both advantages and disadvantages. The primary advantage of whole-word approaches is that they work well for words that are considered irregular. Many whole-word approaches, however, rely on rote memorization for all words, instead of taking advantage of phonemic rules that can simplify the task of spelling. In typical whole-word spelling programs, words are grouped together in a list based on some similarity (e.g., similar beginning sound like /wh/ or /th/ or words belonging to a common theme like words related to states or countries). Students are often required to memorize the words for a test given later in the week. This heavy reliance on memorization strategies for spelling could be compared to requiring students to memorize the answers to all multi-digit subtraction problems instead of teaching them the rule for borrowing (Dixon, 1993). In short, memorization is not the most efficient strategy for spelling instruction of all words but can be used effectively to teach irregularly spelled words.

Whole-word approaches to spelling instruction typically use either implicit or explicit learning strategies for students to memorize word spellings. Implicit approaches to instruction rely heavily on the philosophy that exposure to new concepts will lead to the learning of those con-

cepts. Implicit approaches to spelling instruction give students the information that is to be learned (exposure) but may not provide much guidance on how to learn the information. Weekly spelling lists and tests often use an implicit learning strategy. In this approach, the students are provided a list of words to learn and a date to learn them by but are not given specific instruction for how to learn them. By contrast, explicit approaches to instruction follow the philosophy that students need to be guided by teachers through specific steps of instruction that lead directly to learning a skill or concept.

Several examples of explicit whole-word spelling curricula exist in the published research literature. For example, the *Add-A-Word* spelling program is an explicit, whole-word approach to spelling instruction (Pratt-Struthers, Struthers, and Williams, 1983). Using the *Add-A-Word* program, students are given individualized spelling lists. Students study their lists daily using various techniques including a study, copy, cover, and compare strategy. At the end of each spelling session students take a test for their spelling words. Word mastery is demonstrated when a student correctly spells the word for three consecutive days. When a word is mastered, it is dropped from the list and a new word is added.

Explicit, whole-word approaches to spelling have been shown to produce highly accurate spellers. In two studies of the *Add-A-Word* program, Pratt-Struthers et al. (1983) and Struthers, Bartlamay, Bell, and McLaughlin (1994) found that this program was effective for increasing spelling accuracy. Specifically, the *Add-A-Word* program increased overall spelling accuracy (Struthers et al.) and increased the accurate spelling of journal words from a low of 0% to a high of over 80% correct (Pratt-Struthers et al., 1983).

A second example of an explicit whole-word spelling program is the Write-Say method. Using this technique, students independently study their spelling words using a prescribed sequence of exercises. First, a student looks at a word. Then, while touching each letter of the word, the student spells the word. Next, the student covers the word so it is no longer visible. The word is then written on a separate piece of paper. Finally, the student uncovers the correctly spelled word and checks to see if he or she has copied it down correctly. Kearney and Drabman (1993) used the Write-Say method with a small sample of students receiving special education services and found that it improved spelling accuracy by 34.9% in less than seven weeks.

Spelling Mastery represents a third example of an explicit, whole-word approach to spelling instruction. For high frequency, irregular words that cannot be spelled by applying phonemic rules, *Spelling Mastery* uses an explicit whole-word approach to spelling instruction. A typical whole-word lesson in *Spelling Mastery* begins by introducing students to a sentence that contains irregular words (e.g., *I thought he was through.*). At first the unpredictable letters or letter combinations are provided and students must fill in the missing letters (e.g., ___ ough – ___ a ___ ough). Presenting the irregular words in this way teaches the students that even irregular words have some predictable elements. Gradually, the number of provided letters is decreased until students are able to spell all the words without visual prompts. Once the sentence is learned, variations are presented so that students can apply the spelling of irregular words to various sentence contexts (e.g., *She thought about her homework throughout the night.*). This explicit approach to whole-word spelling instruction leads students through gradual steps toward the ultimate goal of accurate spelling performance. For example, McCormick and Fitzgerald (1997) demonstrated how the use of *Spelling Mastery* could raise the spelling skills of

6th grade students at least one year above their grade level norms.

The English language contains words with both regular and irregular spellings. Both the phonemic and whole-word approaches may be required to teach regularly or irregularly spelled words. While phonemic and whole-word approaches to spelling instruction work well for many words, some words conform to a third set of spelling conventions, and therefore are more appropriately taught using a third spelling approach.

Morphemic Approach

A morphograph is the smallest unit of identifiable meaning in written English. Morphographs include prefixes, suffixes, and bases or roots. Following a small set of rules for combining morphographs can create many words in the written English language. For example, the word *recovered* is made up of the prefix *re*, the base *cover*, and the suffix *ed*. Using the principles that govern the structure of words, the morphemic approach to spelling instruction teaches students the spellings for morphographs rather than whole words and the rules for combining morphographs to spell whole words correctly. For example, using a morphemic approach, students would be taught that when a base ends in the letter *e* (e.g., *make*) and is to be combined with the /ing/ suffix, the letter *e* is always dropped (*make* becomes *making*).

The morphemic approach to spelling instruction offers several advantages. First, morphographs are generally spelled the same across different words. For example, the morphograph *port* is spelled the same in the words *porter*, *deport*, and *important*. Second, when the spelling of a morphograph changes across words it does so in predictable ways. The morphograph *trace* is spelled differently in the words *trace* and *tracing*, but the change is governed by the rule for dropping the final *e*. Third, the number of morphographs is

far fewer than the number of words in the written English language, and the number of principles for combining morphographs is relatively small. Therefore, teaching students to spell morphographs and teaching the rules for combining morphographs will allow students to spell a far larger set of words accurately than by teaching individual words through rote memorization of weekly spelling lists.

Research has shown that good spellers have a stronger grasp of the principles for combining morphographs than poor spellers. Bruck and Waters (1990) divided students into three groups based on academic skills: (a) good (good readers, good spellers), (b) mixed (good readers, poor spellers), and (c) poor (poor readers, poor spellers). The most significant difference between students in the good, mixed, and poor groups was that good students showed better skills related to the use of morphographs.

Spelling Through Morphographs provides explicit instruction in the use of morphographs. Students are taught to spell a small set of morphographs and then learn to combine these morphographs into multisyllabic words. This first step is relatively simple and does not require knowledge of spelling rules. For example, students might learn to spell the morphographs *form* + *al* + *ly*, and combine them together to spell the word *formally*. The next step in the morphemic instructional approach requires students to form words that involve previously taught and thoroughly reviewed spelling rules. For instance, when a short morphograph ends with a consonant–vowel–consonant (CVC) letter sequence and the next morphograph begins with a vowel, the final consonant is doubled. These combination rules help students avoid common spelling mistakes. Students who lack skills using morphographs might have difficulty spelling the words *hopping* and *hoping* (adding the /ing/ suffix to the words *hop* and *hope*). Using the rules for dropping the final *e* and for CVC consonant doubling, stu-

dents will consistently and accurately spell these words (*hop* becomes *hopping* while *hope* becomes *hoping*) and many others that conform to the same morphemic rules. This morphemic spelling approach continues, gradually increasing in difficulty with the addition of new spelling rules and new morphographs. Upon completion of the *Spelling Through Morphographs* curriculum, students are able to analyze new words that contain morphographs by applying their knowledge of multiple spelling rules.

In summary, phonemic, whole-word, and morphemic approaches are useful for teaching the wide variety of word types in the English language. Together these approaches represent a comprehensive set of strategies for teaching children to be accurate spellers.

Direct Instruction Components

In addition to these approaches, several other research-validated components should be included when considering effective spelling instruction. Those components include (a) sequenced lessons, (b) cumulative review and distributed practice, and (c) systematic error correction.

Sequenced lessons. Within the context of teaching academic content domains, several questions are relevant to the design of an effective curriculum. Is there, for example, a logical starting point for an instructional unit? Should some skills be taught prior to others? Can student performance be improved by carefully ordering the presentation of instructional materials? For academic curricula based on Direct Instruction principles, the answer to these questions is a resounding yes (Adams & Engelmann, 1996; Gersten, Woodward, & Darch, 1986). *Spelling Mastery* provides one example of a spelling curriculum that is carefully organized around those design considerations.

Spelling Mastery consists of six instructional levels (Levels A through F) and a total of 660 les-

sons. Lessons within each level are sequenced so that students learn simple spelling strategies (e.g., letter-sound correspondence for predictably spelled words) before more complex spelling strategies (e.g., morphemic spelling rules) are introduced. In addition, within each lesson, introduction of new content is sequenced to minimize acquisition of misrules. For example, the letters *b* and *d* are introduced in separate lessons to avoid potential confusion between them. With thoughtfully sequenced lessons, a spelling curriculum can be used to teach students to spell while minimizing spelling errors.

Cumulative review and distributed practice. Review and distributed practice provides students the opportunity to master new skills, and more importantly, to retain those skills across time. The age-old adage that “practice makes perfect” is supported by the research on effective instruction. Practicing a newly acquired skill builds proficiency with the skill (Engelmann & Carnine, 1991; Gettinger, Bryant, & Fayne, 1982). Unfortunately, many spelling programs do not emphasize cumulative review or distributed practice. In traditional basal spelling programs students typically are not required to review or practice spelling any words for which they already have been tested. Due to the critical role that cumulative review and distributed practice play in the development of good spellers, teachers should provide opportunities for regular review and practice spelling words that already have been learned (Collins, 1983).

Spelling curricula that are consistent with these principles include *Spelling Mastery*, *Spelling Through Morphographs*, and the *Add-A-Word* program. For example, lessons in the *Spelling Through Morphographs* curriculum have been sequenced so that spelling words are efficiently learned and then effectively retained. New morphographs are introduced as units that are always spelled the same way. These newly

learned morphographs are practiced using a variety of verbal and written exercises. For example, the morphograph *press* is introduced and spelled verbally in a group lesson. Later the students practice identifying and spelling the morphograph *press* in their workbooks. Once the students have practiced spelling a morphograph in a variety of different activities they are asked to complete application exercises requiring use of the previously introduced morphograph to spell a variety of words (e.g., *impress*, *pressing*, and *depressed*). Not only does this sequence teach progressively more difficult content but also provides review and practice of previously learned morphographs. In general, opportunities to review and practice spelling skills are important for long term spelling success.

Systematic error correction. Error correction procedures provide immediate feedback that students can use to improve their performance (Brophy & Good, 1986; Kinder & Carnine, 1991). Error correction procedures can include a variety of different strategies. Examples include circling incorrect responses on a worksheet or delivering a verbal cue such as, “Double-check your answer.” Many curricula ignore the importance of teacher corrections for student mistakes, giving preference instead to allowing (even encouraging) students to discover and learn from their mistakes. Although this discovery learning approach may have some intuitive appeal, research has consistently demonstrated that students receiving teacher-directed programs (that incorporate systematic error correction strategies) consistently outperform students in self-directed learning programs (Becker, 1978; Becker & Gersten, 1982).

In addition to highlighting students’ mistakes, error correction can serve an instructive function as well (i.e., by providing information about correct responses). *Spelling Mastery* and *Spelling Through Morphographs* address error correction through a series of structured, teacher-directed responses to student spelling errors. Error cor-

rection procedures in these curricula combine (a) teacher demonstration (i.e., model) of correct responding with (b) guided opportunities for students to respond correctly (i.e., lead), and (c) assessment of student knowledge (i.e., test). For example, if a student misspelled the word *friend*, the teacher would model the correct spelling. “Listen: *f-r-i-e-n-d*.” Next the teacher would check the student to see if the model was effective in correcting the error. “Your turn. Spell *friend*.” If a student makes a spelling error during this knowledge test, the teacher would model the correct spelling a second time, “Listen again: *f-r-i-e-n-d*,” and then would lead the student through guided practice, “With me, spell *friend*. *F-r-i-e-n-d*.” The teacher then tests again to see if the correction was effective by asking the student to “Spell *friend*.” If the student correctly spells the word on this second test, the teacher backs up in the lesson and re-teaches the part of the lesson where the initial error occurred. This structured teacher response to errors prevents students from making repeated mistakes and provides instructional feedback that helps students become more accurate spellers.

Comparisons of Spelling Curricula

While several spelling programs describe research-validated practices, (e.g. *Add-A-Word*, *Write-Say*) few have been compared to other spelling programs. Of the few published comparative research studies, most have focused on *Spelling Mastery* and *Spelling Through Morphographs*. A review of those comparative studies follows.

Students taught to spell using *Spelling Mastery* and *Corrective Spelling Through Morphographs* (now known as *Spelling Through Morphographs*) consistently outperformed students taught to spell through other spelling programs. Darch and Simpson (1990) found that students who received spelling instruction in *Spelling Mastery* outperformed students who were taught to use

the strategy of “imagining themselves correctly spelling words on a movie screen.” Gettinger (1993) found that students spelled more words correctly after participating in a Direct Instruction spelling program (reportedly sharing several of the major components of *Spelling Mastery* and *Spelling Through Morphographs*) than students participating in an inventive spelling program (i.e., an instructional approach that encourages students to spell all words phonetically, including words with irregular spellings). Comparisons with more traditional basal spelling curricula (e.g., Earl, Wood, & Stennett, 1981) also have demonstrated significant spelling gains for students receiving instruction in *Spelling Mastery* or *Spelling Through Morphographs*, with students at times doing more than twice as well as students receiving other spelling instruction (Vreeland, 1982).

Several other studies have demonstrated substantial gains in spelling performance by comparing performance both before and after instruction using the *Spelling Mastery* and *Spelling Through Morphographs* curricula (Robinson & Hesse, 1981; Sommers, 1995). For example, Maggs, McMillan, Patching, and Hawke (1981) found that directly teaching spelling using *Morphographic Spelling (Corrective Spelling Through Morphographs)* was adapted from *Morphographic Spelling* greatly enhanced spelling performance. Both general and special education students made 15-month and 11-month gains, respectively, in spelling performance during an 8-month period. Further, substantial gains in spelling performance following instruction using *Corrective Spelling Through Morphographs* were retained by students 1 year after the end of spelling instruction (Hesse, Robinson, & Rankin, 1983).

In addition, research studies have demonstrated the advantages of spelling instruction using *Spelling Mastery* and *Spelling Through Morphographs* for a variety of different students, including (a) general education students in the primary grades (Burnette et al., 1999;

McCormick & Fitzgerald, 1997; Vreeland, 1982), (b) general education students in middle school (Earl et al., 1981; Hesse et al., 1983; Robinson & Hesse, 1981), and (c) students with significant delays in the area of spelling (Maggs et al., 1981).

Conclusion

While often neglected, spelling is an important academic skill for students to learn in school. Further, spelling can be taught directly and systematically. Spelling programs that teach spelling through phonemic, whole-word, and morphemic approaches while utilizing Direct Instruction components (e.g., systematic error correction, cumulative review/distributed practice, and sequenced lessons) are highly effective in teaching accurate spelling. Several evaluations of *Spelling Mastery* and *Spelling Through Morphographs* have provided compelling evidence for their substantial effects on the spelling development of children and for the importance of the research-validated components embedded within their instructional design.

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