



Reading Horizons: A Journal of Literacy and Language Arts

Volume 36

Issue 3 January/February 1996

Article 3

2-1-1996

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Kathryn L. Laframboise

University of South Florida

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Recommended Citation

Laframboise, K. L. (1996). Developmental Spelling in Fourth Grade: An Analysis of What Poor Readers Do. *Reading Horizons: A Journal of Literacy and Language Arts*, 36 (3). Retrieved from https://scholarworks.wmich.edu/reading_horizons/vol36/iss3/3

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WESTERN MICHIGAN UNIVERSITY
Dorothy J. McGinnis
Reading Center and Clinic



Developmental Spelling in Fourth Grade: An Analysis of What Poor Readers Do

Kathryn L. Laframboise

Since Carol Chomsky (1971a, 1971b) and Charles Read (1971) published their pioneer reports on the development of writing behaviors in young children, examinations of the developmental or invented spellings of emergent writers have contributed to changes in emphases in early literacy instruction. Before that time educators seldom advocated writing experiences for children before they learned to read (Adams, 1990). During the past twenty-five years, there have been careful descriptions and analyses of the developmental stages and strategies of young children who experiment with and work through patterns of spelling while discovering written language. As a result of this body of work, more teachers have learned to decipher and assess the development of spellings of preschoolers and primary grade students. The increased ability to understand beginning attempts with print of the youngest writers has no doubt contributed to the encouragement of story writing, journals, and other writing activities from the earliest school years. Fortunately, the increase in opportunities to write also enhances the development of phonemic awareness and word recognition, both of which are predictors of future reading success (Gill, 1992; Juel, Griffith, and Gough, 1986; Perfetti, 1985; Tunmer and Nesdale, 1985).

Spelling research with children beyond the primary grades have differed somewhat from research with emergent writers. Studies with older children include identifying frequently misspelled words (Farr, Beverstock, and Robbins, 1988; Farr, Kelleher, Lee, and Beverstock, 1989) and the frequency and location of orthographic elements in troublesome words (Frederiksen, 1978; Juel and Solso, 1981), determining the percentages of misspellings in lists of isolated words (Tulley, 1990) or running text (Applebee, Langer, and Mullis, 1987), and describing elements of English orthography that cause students difficulties (Schlagal, 1989). The research on the strategies of the younger writers who create spellings does not identify difficult words or calculate percentages of misspellings because, at the early stages of invented spellings, most words are difficult and misspelled. These studies provide descriptions of spelling strategies used by young children (Chomsky, 1971a, 1971b; Gentry, 1978, 1981, 1987; Henderson and Chard, 1980; Read, 1971, 1986), and the descriptions have enabled teachers to unlock the meanings of the writing of young children. In fact, Henderson (1981) called the work of Chomsky and Read the "Rosetta Stone" of children's invented spelling.

No such "Rosetta Stone" exists for the spellings of slightly older students who may, in fact, employ similar strategies, but whose writing looks very different from their younger schoolmates. The invented spellings of older students cause considerable difficulties for readers and may become a reason why teachers select fewer open-ended writing activities and more workbook-type activities for the students whose writing they cannot read. The purpose of this study is to examine the developmental spellings of fourth grade students who are poor readers. The analysis of spellings used in written story retellings suggests categories of misspellings that may demonstrate developmental spelling strategies used by

this sample of students. Current research is reviewed to present possible interpretations of the strategies used by these developmental spellers. Finally, instructional practices are summarized that may influence the spelling strategies of below average readers.

Subjects.

The study was conducted in a rural school district of approximately 30,400 students. Sixty-three fourth grade students in six self-contained Chapter One classes in six schools were used in the study. Class sizes ranged from 9 to 12 students. Students' performance in reading comprehension on the Stanford Achievement Tests (Psychological Corporation, 1985) ranged from a percentile score of 8 to a percentile score of 46. Students with verified learning disabilities were served in other programs in the school and were not students in these classes.

Writing Samples.

Written story retellings were taken from 63 subjects using four wordless cartoon videos, each between five and seven minutes in length, as prompts. Students were given a purpose-setting question before viewing each cartoon. At the video's conclusion, students were told to pretend they were retelling the cartoon story to a friend who had not seen it. When students did not know how to spell a word, they were encouraged to figure out the spelling for themselves. They were not told the spelling of words if they asked.

Each of the six classes participated in four writing sessions with the video prompts counterbalanced across groups and writing sessions. A random selection procedure was used to obtain equal numbers of writing samples from each of the classes for each video prompt and writing session. The result was two writing samples from each class for each writing

session. Forty-eight writing samples, each from a different student, were analyzed.

Spelling Analysis. The written story retellings were read by the author and a second reader, and a list of misspellings was generated for each of the writing samples. Misspellings were then compared to the intended words, and categories descriptive of the misspellings were created. Finally, each misspelling was examined for the sources of misspellings within the word. The three steps are described below.

Operational definition of a spelling error. While a mismatch between the child's spelling and dictionary spelling is a logical definition of a spelling error, there are also many usage errors often classified as spelling errors. In order to establish comparability between this study and other studies, guidelines established in previous studies were reviewed. Criteria established by Farr, Beverstock, and Robbins (1988) and Farr, Kelleher, Lee, and Beverstock (1989) in a study of approximately 22,000 writing samples of students grades 2 through 8 were used. In addition to the mismatches between the student's spelling and the dictionary spelling, criteria for misspellings included the following: 1) homophones spelled but not used correctly; 2) one word written as two words; 3) two words written as one word; 4) addition, omission, or misplacement of apostrophe; 5) addition or omission of suffixes that produced non-words; and 6) incorrect verb forms (e.g., lie for lay) when the incorrect form changed the meaning of the sentence.

Categories of misspellings. The list of misspelled words was examined for possible categories of misspellings. Categories reflect what the student actually wrote compared to what the student intended to write. Intended words were

determined by story sense based on the cartoon story. Preliminary categories of words were the following:

Phonetic misspellings. Misspellings in this category contain some of the phoneme-grapheme correspondences of the intended word. The student may choose an incorrect but possible phoneme-grapheme correspondence. The resulting misspelling is not a real word (e.g., *dowen* for *down*).

"Near Misses." The misspellings are real words, but not the words intended by the writer. The written word when pronounced correctly may sound similar but not identical to the intended word (e.g., *not* for *knocked* or *that* for *thought*). These misspellings are also phonetic misspellings but, because of the number of occurrences, are classified and discussed separately.

Homophones. This category contains words that are pronounced the same but are spelled differently and have different meanings (e.g., *there* for *their*).

Other misspellings. A general classification was used for usage errors and spelling punctuation errors. Included in this category were incorrect verb forms (e.g., *runned* for *ran*) words with omitted inflectional endings (e.g., *play* for *played*), words with misplaced, added, or omitted apostrophes; and incorrect compound words (e.g., *sun shine* for *sunshine*).

During the preliminary classification of misspellings, a category of non-phonetic misspellings was used, but this was later deleted because all misspellings contained at least some of the phoneme-grapheme correspondences of the intended word.

Sources of spelling errors within words. In addition to the four categories used to classify the misspellings made by the students in their writing, sources of spelling errors within words were described using the following categories:

Vowel errors. Four types of vowel errors were determined. First, the student chose an alternative, but possible orthographic representation of the appropriate vowel sound (e.g., *wate* for *wait*). Second, the student wrote an incorrect representation of a vowel sound (e.g., *fented* for *fainted*). Third, the student omitted a pronounced vowel (e.g., *pl* for *pull* or *begn* for *began*). Fourth, a pronounced vowel was added (e.g., *dowen* for *down*).

Consonant errors. Consonant misspellings were of five types. First, the student chose an alternative, but possible orthographic representation of the appropriate consonant sound (e.g., *chace* for *chase*). Second, the student wrote an incorrect representation of a consonant sound (e.g., *junp* for *jump*). Third, a pronounced consonant was omitted (e.g., *sade* for *saved*). Fourth, a pronounced consonant was added (e.g., *fanted* for *fanned*). Fifth, the student misspelled a blend or consonant digraph (e.g., *sring* for *string* or *shair* for *chair*). Misspellings of blends and digraphs also belonged in one of the four subcategories described above. For example, *sring* has a missing consonant, and *shair* has an incorrect representation of a consonant sound. They were classified separately because of the number of occurrences and were not counted in the above groups.

Misspelling of an inflectional ending. Students making this type of error unsuccessfully attempted a spelling of an inflectional ending (e.g., *bugz* for *bugs* or *helpt* for *helped*).

Reversal of the order of phonemes. An example of this category of misspelling is *firts* for *first*.

Reversal of letters. An example of this category of misspellings is *wed* for *web*. While spelling errors in this study were not counted twice, words in one category may have actually been the result of a different type of error. For example, the word *web* was misspelled as *wed* several times. Source five above assumes the child intended to write the letter *b* but reversed it. The writer may actually have written an inappropriate grapheme.

Results

Percentages of misspellings

The 48 students produced 5145 running words in their writing samples, with 842 of the words misspelled. The range of percentages of misspellings in individual writing samples was from 5.63% to 48.15% of the total words, with a mean of 19.39%. Applebee, Langer, and Mullis (1987) and Farr et al. (1989) determined average fourth graders make spelling errors in approximately 8% of their words, while Stewig's (1987) sample of fourth grade students made misspellings in fewer than 3% of their words. Students described here clearly experienced greater difficulties in spelling than those expected for the average fourth grader.

Categories of misspellings

In order to understand the spelling strategies the students used while writing their story retellings, the misspellings were classified in the four categories previously described. Table 1 reports number and percent of misspellings for each category. While phonetic misspellings that were not real words accounted for the largest proportion of spelling errors, a large number of the misspellings ended up as other real words (e.g., *head* for *hand*). Some of the students made

nearly half of their spelling errors in this category. Inspection of the data did not suggest the percentages in the latter category, which we called "near misses," was correlated to the length of writing samples.

Table 1
Number and Percents of Misspellings in Four Categories

<u>Category</u>	<u>n</u>	<u>%a</u>
Phonetic	523	62.11
Near Misses	175	20.79
Homophones	47	5.58
Other	97	11.52
Total	842	

%a = percent of misspellings compared to the total misspelled words

Strategies used by students making errors in the third and fourth categories seem to be different from spelling strategies employed when writing phonetic misspellings and near misses. Incorrectly selecting a homophone may reflect a transitional spelling strategy, but for many writers it is a vocabulary problem; that is, the writer knows the possible spellings but hasn't correctly matched the spelling with its definition. Words in the fourth classification, which were mostly omissions of inflectional endings, incorrect use of apostrophes, and errors in compound words, typically reflected use of dialect or lack of mastery of spelling rules, such as placement of apostrophes. For these reasons words in the third and fourth categories were not further analyzed. The sources of errors within words for the first two categories, however, were analyzed to discover strategies students might have used.

Sources of spelling errors within words

Table 2 reports the number of percentages of each source of error within words. The spelling of vowel and consonant phonemes comprised approximately 90% of sources of spelling errors within words. Not surprisingly, vowel graphemes caused more problems for the writers in the study than did consonants, 51.32% compared to 38.21%. Of the 842 misspelled words, 24.58% contained more than one source of error.

Table 2
Sources of Spelling Errors Within Words

<u>Category</u>	<u>n (a)</u>	<u>% (b)</u>
Vowels	505	51.32
Consonants	376	38.21
Inflectional endings	62	6.30
Order of phonemes	32	3.25
Reversal of letters	9	.91
Total	984	

n (a) = number of errors in each category

% (b) = percent of errors in each category compared to the total number of error sources within words

Vowel errors were classified according to four sources (see Table 3). Three sources of error are relatively small. The exception is the representation of a vowel phoneme with an inappropriate grapheme (e.g., *scrim* for *scream*). Over 37% of the vowel errors were the use of inappropriate graphemes compared to approximately 7% of the errors containing possible but incorrect vowel spellings.

Table 3
Sources of Vowel and Consonant Spelling
Errors Within Words

<u>Category</u>	<u>Vowel Errors</u> n (a) % (b)	<u>Consonant Errors</u> n (%)
Alternative orthographic representation of appropriate phoneme	66 (6.71)	119 (12.09)
Representation of phoneme with inappropriate grapheme	369 (37.50)	46 (4.67)
Omission of phoneme	58 (5.89)	91 (9.25)
Addition of phoneme	12 (1.22)	43 (4.37)
Misspelling of blend or digraph		77 (7.83)
Total	505 (51.32)	376 (38.21)

n (a) = number of errors in each category

% (b) = percent of misspellings in each category compared to the total number of error sources (N=984).

Table 3 also reports the number and percentages of consonant errors in five categories. The sources of consonant spelling errors were more evenly distributed than vowel errors. Unlike the vowel errors, students were more likely to use an alternate but possible consonant spelling than an inappropriate one. The patterns of spelling errors will be discussed in the following section.

Discussion

Vowel spelling errors

Representations of vowel phonemes with inappropriate graphemes make up 37.50% of the sources of spelling errors in

the writing samples and comprises, not only the largest proportion of vowel errors, but also the largest single source of spelling errors within words. Research offers possible reasons for these difficulties.

Treiman (1987, cited in Adams, 1990) determined four factors influencing the correct spellings of words: 1) phonemes containing letter-names; 2) the simplicity of the letter-sound correspondence; 3) the number of possible ways the phoneme can be spelled; and 4) the number of letters in the grapheme. In general, vowels are considered to be more difficult to spell because vowel phonemes have more alternative spellings and the spelling representations contain more letters (Horn, 1957). Students often substituted vowel graphemes within words and used familiar, but inappropriate, vowel patterns; for example, *creed* for *cried*, *thir* for *there*, and *alime* for *alarm*. In these examples all phonemes were represented.

Exposure to printed text may have also affected the vowel spelling strategies of students (Cunningham and Stanovich, 1990). Many of the spellings were not simply attempts to phonetically reproduce the words. While poor readers are given fewer opportunities to read in the classroom (Allington, 1980, 1983, 1984) and, therefore, have less exposure to print than good readers, these fourth grade students have been exposed to print in varying degrees during their years in school. Visual memory, as well as spelling instruction, influences the way children attempt to spell a word. Students may have remembered certain words are longer or they contain a difficult vowel spelling and so tried to reproduce something that looked like the word they remembered. One of the cartoon stories told how a spider caught insects, and many of the retellings used the word caught. *Cot*, a simple phonetic spelling typical of the invented spelling of younger children,

occurred infrequently. Many longer variations, including *cout*, *couht*, and *cought*, were used by the students. Other examples of misspellings that likely reflect the effects of visual memory and spelling instruction include *throw* for *threw*, and *ound* for *owned*, *apoun* for *upon*, *cuold* for *could*, *oriand* for *around*, *trow* for *through*, *flowting* for *floating*, and *fawnd* for *found*. The written words demonstrate attempts of spellers who have not yet stored the orthographic representations of words and are ineptly applying orthographic principles.

Omission of phonemes

Omission of pronounced vowels and consonants made up 15.14% of the sources of errors. The ability to segment phonemes, that is, hear individual phonemes in words, is a predictor of the child's ability to read (Adams, 1990; Goswami and Bryant, 1990), and spelling is often used diagnostically to indicate students' ability to segment phonemes. The omission of pronounced consonants in words may indicate the lack of ability to segment phonemes while omission of pronounced vowels may be the result of their occurrence in an unstressed syllable or their pronunciation as part of an adjacent consonant (Treiman, 1985; Treiman, Berch, and Weatherston, 1993). The relatively large percentage of omitted phonemes, 9.25% (n=91) for consonants as opposed to 5.89% (n=58) for vowels, is an indicator of the problems of the students in this study who were poor readers and whose writing samples contained large percentages of misspellings.

Near misses

The approximately 20% of the misspellings that were other real words were a source of difficulty for the two readers in their comprehension of the written story retellings. Seven of the writing samples contained no near misses, but an equal number of students made over 35% of their misspellings in

this category. Possible reasons why students wrote so many near misses is an interesting question. The answer may lie in the nature of the words as well as in the nature of the spellers. Phonetic spellers usually represent all phonemes in their spelling attempts. Transitional spellers will frequently choose a possible orthographic representation of a phoneme, for example, *ee* for *ea* or a vowel digraph for the consonant-silent *e* (V-C-e) spelling pattern. Phonetic and transitional spellers who exchange vowel graphemes for vowel graphemes and consonant graphemes for consonant graphemes may produce other real words (e.g., *fine* for *vine* and *oat* for *ate*). Semi-phonetic spellers who omit vowel graphemes usually write non-words. Only 5.89% of the spelling errors were omissions of pronounced vowels. This may reflect the developmental spellings of phonetic and transitional spellers who can discriminate vowel phonemes and also be the result of instruction emphasizing the presence of a vowel phoneme in every syllable.

Previous exposure to print, spelling instruction, and development may have also eliminated some invented spelling patterns that do not exist in English orthography. While these factors did not produce skilled spellers, the fourth grade students did not use some of the invented spelling patterns common in younger writers. For example, *ir* is a common phonetic spelling of the *dr* grapheme that occurs in the writing of younger students, even though it does not occur in English orthography. One of the cartoons showed a character driving a machine. Although *drive* was misspelled in several stories, *ir* was never used.

Implications for instruction

Spelling and reading instruction. The students in the present study are caught in a catch-22 situation. Their poor reading skills limit their exposure to spelling patterns that

should be encountered in reading of instructional and independent level materials. Gill (1992) theorizes the student does not notice everything that is seen in text, but what is noticed is a reflection of the child's theoretical word knowledge. Repeated exposures to invariant spelling patterns during reading in inappropriate level materials become what is noticed and allow the child to construct the next level of phonological and word knowledge, leading to new understandings of orthographic concepts necessary for fluent reading. On the other hand, without these underlying orthographic principles, students will continue to struggle with both reading and spelling, further limiting their exposure to text.

Curriculum in the six classes followed county guidelines and included county adopted texts. A basal reading program was the main source of instructional materials for reading, and students were placed in below grade level basal materials when appropriate. Similarly, students were placed in below grade level math materials. Content subjects, spelling, and language arts, however, were grade level texts. Whether using tradebooks or district adopted texts, finding enough materials on instructional and independent reading levels is a serious problem, especially in the content subject areas. Many students, therefore, spend a portion of each day in reading materials above their instructional level.

Spelling placement is another area that needs to be examined. Schlagal (1992) and Trathen, Schlagal, and Blanton (1994) found that children benefit from instruction when placed in spelling materials on their instructional level rather than grade level. Children in their studies learned more words targeted by the spelling series when working in instructional level materials than when working in grade level texts that were too difficult. They also transferred their learning to more words not included in the word lists of the programs.

Schlagal and Trathen et.al., concluded that placing children in grade level spelling programs was an obstacle for many children in developing spelling strategies.

Opportunities for writing. Providing fewer opportunities to write limits students' access to knowledge leading not only to accurate spelling in writing, but also to fluent decoding during reading (Adams, 1990; Schlagal and Schlagal, 1992). In a state-wide survey of writing instructional practices in elementary schools, Laframboise and Klesius (1993) found limited writing opportunities in classrooms contrary to stated county or state level guidelines. Sizable percentages of teachers reported they did not include the following types of writing in their language arts program: journals and logs (24.47%), creative and expressive writing (10.84%), and information writing (31.56%). The survey did not distinguish opportunities for high achieving students compared to low-achieving students.

Keith Stanovich (1986) describes and Allington (1980, 1983, 1984) has documented the "Matthew effect" in the reading classroom. Good readers are given more opportunities to read in all areas of the curriculum and, therefore, become even better readers while the poor readers are given fewer opportunities to improve their reading skills. While not documented, it is possible that the "Matthew effect" also works in the writing class, that is, poor writers are given fewer opportunities to write.

Poor spellers need opportunities to write if they are to become better writers. This analysis of the spellings of fourth graders who are poor readers and spellers has provided descriptions of developmental spellings that make students' written stories especially difficult to read. The study was limited by the size of the sample. The classifications of spelling

errors were based on definitions used in other studies. The analysis was not exhaustive, and other categories and interpretations could be made with a larger or different sample of students. Further research could provide a more in-depth analysis of the strategies of similar writers.

Descriptive studies have unlocked the writing of very young students to adult readers. The spellings of words in stories of this sample of intermediate grade students was a formidable obstacle to the readers' comprehension. Facing such difficulties in reading students' writing, both teachers and peers may become reluctant audiences for writing experiences. The understanding of these strategies may encourage teachers to offer students more writing experiences that will help poor readers, writers, and spellers in their acquisition of literacy.

References

- Adams, M. (1990). *Beginning to read: Thinking and learning about print*. Cambridge MA: The MIT Press.
- Allington, R. (1980). Poor readers don't get to read much in reading groups. *Language Arts*, 57, 872-876.
- Allington, R. (1983). The reading instruction provided readers of differing reading abilities. *The Elementary School Journal*, 83, 548-559.
- Allington, R. (1984). Content coverage and contextual reading in reading groups. *Journal of Reading Behavior*, 16, 85-96.
- Applebee, A., Langer, J., & Mullis, I. (1987). *Grammar, punctuation, and spelling: Controlling the conventions of written English at ages 9, 13, and 17 (Report No. 15-W-03)*. Princeton NJ: Educational Testing Service.
- Chomsky, C. (1971a). Invented spelling in the open classroom. *Word*, 27, 499-518.
- Chomsky, C. (1971b). Write first, read later. *Childhood Education*, 41, 296-299.
- Cunningham, A., & Stanovich, K. (1990). Assessing print exposure and orthographic processing skills in children: A quick measure of reading experience. *Journal of Educational Psychology*, 82, 733-740.
- Farr, R., Beverstock, C., & Robbins, R. (1988). *An examination of the writing vocabulary of children in grades two through eight: A study of a national sample of children's writing*. (ERIC Document Reproduction Service No. ED 300 820).

- Farr, R., Kelleher, C., Lee, J., & Beverstock, C. (1989). *An analysis of the spelling patterns of children in grades two through eight: A study of a national sample of children's writing*. (ERIC Document Reproduction Service No. ED 321 274).
- Frederiksen, J. (1978). Assessment of perceptual decoding and lexical skills and their relationship to reading proficiency. In A. Lesgold, J. Pelligrini, S. Fokkems, & R. Glaser (Eds.), *Cognitive psychology and instruction*. NY: Plenum Press.
- Gentry, J. (1978). Early spelling strategies. *Elementary School Journal*, 79, 88-92.
- Gentry, J. (1981). Learning to spell developmentally. *Reading Teacher*, 34, 378-381.
- Gentry, J. (1987). *Spel ... is a four letter word*. Portsmouth NH: Heinemann.
- Gill, J., Jr. (1992). Development of word knowledge as it relates to reading, spelling, and instruction. *Language Arts*, 69, 444-453.
- Goswami, U., & Bryant, P. (1990). *Phonological skills and learning to read*. East Sussex, U.K.: Lawrence Erlbaum.
- Henderson, E. (1981). *Learning to read and spell: The child's knowledge of words*. DeKalb IL: Northern Illinois University Press.
- Henderson, L., & Chard, J. (1980). The readers' implicit knowledge of orthographic structure. In U. Frith (Ed.), *Cognitive processes in spelling* (pp. 85-116). NY: Academic Press.
- Horn, E. (1957). Phonetics and spelling. *The Elementary School Journal*, 57, 424-432.
- Juel, C., Griffith, P., & Gough, P. (1986). Acquisition of literacy: A longitudinal study of children in first and second grade. *Journal of Educational Psychology*, 78, 243-255.
- Juel, C., & Solso, R. (1981). The role of orthographic redundancy, versatility, and spelling-sound correspondences in word identification. In M. L. Kamil (Ed.), *Directions in reading: Research and instruction* (pp. 74-82). Washington DC: National Reading Conference.
- Laframboise, K., & Klesius, J. (1993). A survey of writing instruction in the elementary language arts classroom. *Reading Psychology*, 14, 265-284.
- Perfetti, C. (1985). *Reading ability*. NY: Oxford University Press.
- Psychological Corporation. (1985). *Stanford Achievement Tests: Primary 3 (Form E)*. San Antonio TX: Harcourt Brace Jovanovich.
- Read, C. (1971). Preschool children's knowledge of English phonology. *Harvard Educational Review*, 41, 1-34.
- Read, C. (1986). *Children's invented spelling*. London: Routledge & Kegan Paul.
- Schlagal, R. (1989). Constancy and change in spelling development. *Reading Psychology*, 10, 207-232.

- Schlagal, R. (1992). Patterns of orthographic development in the intermediate grades. In S. Templeton & D. Bears (Eds.), *Developmental orthographic knowledge and the foundations of literacy: A memorial festschrift for Edmund Henderson* (pp. 31-52). Hillsdale NJ: Lawrence Erlbaum.
- Schlagal, R., & Schlagal, J. (1992). The integral character of spelling: Teaching strategies for multiple purposes. *Language Arts, 69*, 418-424.
- Stanovich, K. (1986). Matthew effects in reading: Consequences of individual differences in the acquisition of literacy. *Reading Research Quarterly, 21*, 360-406.
- Stewig, J. (1987). Students' spelling errors. *Clearinghouse, 61*, 34-37.
- Trathen, W., Schlagal, R., & Blanton, W. (1994, November). A study of spelling instruction in third grade traditional and whole language classrooms. Paper presented at the thirty-eighth annual meeting of the College Reading Association. New Orleans, LA.
- Treiman, R. (1985). Phonemic analysis and spelling: Children's judgments do not always agree with adults'. *Journal of Experimental Child Psychology, 39*, 182-201.
- Treiman, R. (1987). *Spelling in first grade children*. Paper presented at the annual meeting of the Midwestern Psychological Association. Chicago IL.
- Treiman, R., Berch, D., & Weatherston, S. (1993). Children's use of phoneme-grapheme correspondences in spelling: Role of position and stress. *Educational Psychology, 85*, 466-477.
- Tulley, M. (1990). Children's spelling of Dolch words in grades 2 through 8. *Journal of Reading Education, 16*, 2-14.
- Tunmer, W., & Nesdale, A. (1985). Phonemic segmentation skill and beginning reading. *Journal of Educational Psychology, 77*, 417-427.

Kathryn L. Laframboise is a faculty member in the College of Education at the University of South Florida in Tampa Florida.