

Teaching Spelling in the Primary Grades: A National Survey of Instructional Practices and Adaptations

Steve Graham

Paul Morphy

Karen R. Harris

Vanderbilt University

Barbara Fink-Chorzempa

State University of New York–New Paltz

Bruce Saddler

University of Albany

Susan Moran

University of Maryland

Linda Mason

Pennsylvania State University

Primary grade teachers randomly selected from across the United States completed a survey (N = 168) that examined their instructional practices in spelling and the types of adaptations they made for struggling spellers. Almost every single teacher surveyed reported teaching spelling, and the vast majority of respondents implemented a complex and multifaceted instructional program that applied a variety of research-supported procedures. Although some teachers were sensitive to the instructional needs of weaker spellers and reported making many different adaptations for these students, a sizable minority of teachers (42%) indicated they made few or no adaptations. In addition, the teachers indicated that 27% of their students experienced difficulty with spelling, calling into question the effectiveness of their instruction with these children.

KEYWORDS: elementary schools, survey research, instructional practices, spelling, spelling instruction

Mastering spelling is important to both writing and reading. Spelling errors make text more difficult to read. They can also cause the reader to devalue the quality of the writer's message (Marshall, 1967; Marshall &

Powers, 1969). Spelling difficulties can interfere with the execution of other composing processes (Berninger, 1999). Having to consciously think about how to spell a word while writing, for example, may tax a writer's processing memory, leading him or her to forget ideas or plans he or she is trying to retain in working memory (S. Graham, Harris, & Fink-Chorzempa, 2002). Spelling difficulties can even influence the words writers use when writing, as they are less likely to choose words they cannot spell (S. Graham & Harris, 2005).

McCutchen (1988) and others (Berninger, 1999) have further argued that transcription skills, such as spelling, shape young children's approach to writing, as they are so cognitively demanding that children minimize the use of other composing processes, such as planning and revising, that exert considerable processing demands, too. The resulting approach to writing, which persists well beyond the primary grades, mainly involves telling what one knows, with little attention directed to rhetorical goals, whole-text organization, or the needs of the reader (Scardamalia & Bereiter, 1986). Likewise, Berninger (Berninger, Mizokawa, & Bragg, 1991) found that primary-grade

STEVE GRAHAM is Currey Ingram Professor of Special Education and Literacy at Vanderbilt University, Department of Special Education, Peabody #328, 230 Appleton Place, Nashville, TN 37203-5721; e-mail: steve.graham@vanderbilt.edu. His research interests are writing, self-regulation, and learning disabilities.

PAUL MORPHY is a doctoral student in special education at Vanderbilt University, Department of Special Education, Peabody #328, 230 Appleton Place, Nashville, TN 37203-5721; e-mail: paul.morphy@vanderbilt.edu. His research interests are statistical analysis, meta-analysis, writing, and reading.

KAREN R. HARRIS is Currey Ingram Professor in Special Education and Literacy at Vanderbilt University, Department of Special Education, Peabody #328, 230 Appleton Place, Nashville, TN 37203-5721; e-mail: karen.harris@vanderbilt.edu. Her research interests are strategy instruction, self-regulation, writing, and learning disabilities.

BARBARA FINK-CHORZEMPA is an assistant professor in the Department of Educational Studies, State University of New York–New Paltz, 1 Hawk Drive, New Paltz, NY 12561; e-mail: chorzemb@newpaltz.edu. Her research interests are reading, writing, and learning disabilities.

BRUCE SADDLER is an assistant professor of educational psychology and statistics at the University at Albany, Education 226, 1400 Washington Avenue, Albany NY 12222; e-mail: bsaddler@uamail.albany.edu. His research interests are sentence-combining instruction, strategy instruction, writing, and learning disabilities.

SUSAN MORAN received her PhD from the University of Maryland; e-mail: MORANINSEA@aol.com. Her research interests are learning disabilities, self-monitoring, and writing.

LINDA MASON is an assistant professor in the Department of Educational and School Psychology and Special Education at Pennsylvania State University, 0210 Cedar Building, University Park PA 16802; e-mail: lhm12@psu.edu. Her research interests are strategy instruction, reading, writing, and learning disabilities.

children who have difficulty with spelling avoid writing and develop a mindset that they cannot write, leading to arrested writing development. In contrast, learning about spelling can enhance early reading development by shaping children's knowledge of phonemic awareness, strengthening their grasp of the alphabetic principle, and making sight words easier to remember (Adams, 1990; Ehri, 1987; Moats, 2005/2006; Treiman, 1993).

Because spelling is so important to young children's literacy development, it is critical that spelling is taught effectively during the primary grades. This should help minimize spelling's constraints on writing as well as facilitate the acquisition of foundational reading skills, such as word attack and word recognition (see Berninger et al., 1998, and S. Graham et al., 2002, for examples of these effects). The success of such efforts depends, in part, on providing spelling instruction that is responsive to children's individual needs (S. Graham & Harris, 2002). As Corno and Snow (1986) noted, improved educational outcomes depend on adjusting instruction to individual differences among children. This has become increasingly important in recent years, as schools have become more academically diverse (Fuchs & Fuchs, 1998), and most students with disabilities now receive all or part of their education in regular classrooms. In addition, more children come from families living below the poverty line, placing them at greater risk for academic difficulties (Stallings, 1995).

Although educational theorists, teachers, and students agree that instructional adaptations are desirable (Randi & Corno, 2005; Schumm & Vaughn, 1991; Tobias, 1995), there is very little information on how teachers adapt their instruction to meet students' needs. Pressley and colleagues (e.g., Pressley, Rankin, & Yokoi, 1996; Wharton-McDonald, Pressley, & Hampston, 1998) reported that outstanding literacy teachers deliver a common curriculum to all students but adjust their teaching within this framework to meet students' individual needs, especially for those experiencing difficulty. These teachers provide considerable individualized instruction to children. This stands in contrast to other studies that found that typical teachers make few adaptations (e.g., Baker & Zigmond, 1990; Fuchs & Fuchs, 1998) and that their students continue to struggle when adaptations are not made (e.g., Phillips, Fuchs, Fuchs, & Hamlett, 1996).

The study reported here examined primary-grade teachers' instructional adaptations for children experiencing difficulty with spelling. We concentrated specifically on these students because their spelling difficulties put them at greater risk for writing problems and because they are less likely to benefit from the potential positive impact of spelling on reading due their slow rate of spelling growth. In contrast to Pressley and his colleagues (e.g., Pressley et al., 1996; Wharton-McDonald et al., 1998), who examined the teaching and adaptations of outstanding primary-grade literacy teachers, we focused our investigation on more typical teachers. A national sample of randomly selected primary-grade teachers was surveyed about their instructional practices in spelling and the types of adaptations they made for struggling spellers.

Relatively few studies have examined the spelling practices of contemporary primary-grade teachers or the adaptations they make for struggling spellers. Two recent national surveys of writing instruction (Cutler & Graham, in press; S. Graham, Harris, Fink-Chorzempa, & MacArthur, 2003) found that most primary-grade teachers reported teaching spelling, frequently encouraged the use of invented spelling, and taught spelling words, phonics for spelling, and strategies for spelling unknown words on at least a weekly basis. The only study we were able to locate that examined the adaptations teachers typically make for struggling students was the above survey by S. Graham et al. (2003), but only four of the questions asked focused specifically on spelling. These teachers reported that they more frequently taught phonics for spelling and strategies for spelling unknown words to weaker writers than stronger ones. They further encouraged weaker writers to use invented spellings more often. It is important to note that a sizable minority of teachers (42%) reported making few adaptations (zero to two) for any part of their writing program for weaker writers, with 75% of all adaptations made by just one third of the teachers.

To obtain information on adaptations for weaker spellers in this study, we asked teachers to indicate how often specific spelling activities and procedures were used with weaker and stronger spellers in their class. If a spelling activity or procedure occurred more often with weaker spellers than stronger spellers, then it represented a departure from the general teaching routine and was considered an adaptation. The spelling activities and procedures included in our survey were selected because each is a commonly recommended staple of primary-grade spelling instruction, it is reasonable to expect that teachers might adjust each technique when working with weaker spellers, and there is empirical evidence that the technique is effective with these students (this third criteria was true for most, but not all, techniques; see Method). Teachers were also asked to identify any additional adaptations they made for weaker spellers beyond the activities and procedures that they were queried about directly. Our approach was similar to S. Graham et al. (2003), except we focused on just spelling instead of writing in general. In addition to providing information about spelling adaptations, this survey provided needed information on how spelling is typically taught in primary grades, including how much time is devoted to teaching spelling, the study of spelling words, teachers' use of commercial materials, and how frequently teachers use the selected spelling activities and procedures.

We did not anticipate that participating teachers would report making adaptations for weaker spellers on all of the spelling activities and procedures surveyed, as some adaptations are more acceptable to teachers than others (Schumm & Vaughn, 1991). We did expect, however, that teachers would report making some adjustments in how frequently specific spelling skills were taught as well as modifications in how they taught these skills and promoted successful spelling during writing. Similar kinds of adjustments were reported for weaker writers in S. Graham et al. (2003). On the basis of this prior study, we also anticipated that most teachers would report making

some adjustment in their instruction but that most of the adaptations would be made by a small percentage of teachers and that there would be a sizable proportion of teachers who reported making few or even no adaptations. On the basis of findings from previous studies (Cutler & Graham, in press; S. Graham et al., 2003; Pressley et al., 1996; Wharton-McDonald et al., 1998), we further predicted that almost all participating teachers would indicate they teach spelling. Although previous research does not provide a strong foundation for predicting what spelling skills teachers would emphasize and how they would be taught, we anticipated that teachers' spelling instruction would be multifaceted, involving the teaching of a variety of skills and using many different activities and procedures. This is consistent with most recommended approaches for teaching spelling (e.g., S. Graham, 1999; Loomer, Fitzsimmons, & Strege, 1990; Schlagel, 2007).

Although the spelling practices surveyed in this study were not selected so that specific theories of spelling instruction were contrasted, they do provide some evidence on primary-grade teachers' theoretical orientations. The two basic theoretical orientations to teaching spelling are spelling-is-"caught" and spelling-is-"taught" approaches (S. Graham, 2000). With the former, it is assumed that spelling can be acquired as naturally and easily as speaking, by immersing children in literacy-rich environments where they have plenty of opportunities to read and write for real purposes. In contrast, with the spelling-is-taught approach, it is assumed that it is necessary to directly and systematically teach children how to spell. There are three basic approaches to the spelling-is-taught orientation (Schlagel, 2007): memorization (e.g., students memorize the spelling of specific words), generalization (e.g., students are directly taught rules and skills for spelling unknown words), and developmental (i.e., students connect and extend their grasp of the spelling system through the use of word study activities, such as word sorting). By examining the practices applied by the participating teachers, we can draw some inferences about their theoretical approach to teaching spelling. For example, if teachers indicated that they applied the spelling activities and practices surveyed, it is clear that they do not rely solely on a spelling-is-caught approach. Likewise, if they report that they teach students the skills and strategies needed to spell unknown words, they do emphasize the generalization method from the spelling-is-taught orientation. On the basis of a previous study where primary grade teachers emphasized multiple instructional orientations to teaching writing (S. Graham, Harris, Fink, & MacArthur, 2002), we expected a similar pattern for spelling.

Method

Participants and Settings

A random sampling procedure, stratified by grade level, was used to identify 248 first- through third-grade teachers from the population of primary-grade teachers in the United States. The names were selected from a comprehensive list of 558,444 primary-grade teachers in 72,000 private and

public schools compiled by Market Data Retrieval. A sample size of 248 teachers is adequate for a population of 558,444 teachers under the following conditions (cf. Dillman, 2000): (a) A plus- or minus-5% sampling error is considered tolerable, (b) expected variation in teacher responses is set at .13 and .87, (c) the statistical confidence level is set at 95%, and (d) a return rate of 70% is obtained. We determined expected variation in teacher responses and the expected return rate by using data from S. Graham et al. (2003). This prior study used the same procedures as this investigation to calculate if a teacher made an adaptation and to solicit surveys from teachers. For each item in this previous study, there was a 13% chance that teachers would report making an adaptation and an 87% chance they would not (thus, the .13–.87 ratio). Furthermore, 70% of their sample completed the survey. Using a formula by Dillman (2000) and the first three conditions above (plus- or minus-5% sampling error; .13–.87 variation in responses, and a statistical confidence level of 95%), we needed 174 teachers to complete the survey to have an adequate sample. Assuming a 70% return rate, the survey needed to be sent to 248 teachers.

Of the 248 teachers identified, 68% ($n = 169$) agreed to participate in the study. Demographic information for the 169 responders as well as the 79 nonresponders is presented in Table 1. Chi-square analyses revealed no statistically significant differences between responders and nonresponders in terms of gender, grade, or location of the school (all $ps > .17$). Analyses of variance further indicated that there were no statistically significant differences between responders and nonresponders in terms of school size or annual expenditures for materials per pupil. These findings provide evidence that responders were representative of the whole sample.

Similar to previous surveys with primary-grade teachers (Cutler & Graham, in press; S. Graham et al., 2003) almost all of the teachers were females (see Table 1). For the most part, they were evenly distributed across the three grades (but 11% of them taught multiple grades) as well as across urban, suburban, and rural locations. There was considerable variability in the size of the schools that employed the teachers. As a group, the teachers had taught for slightly more than 16 years (range = 1 year to 48 years; $SD = 10.6$ years). The average size of their class was 20.7 students ($SD = 5.0$), with approximately 8.7% of students ($SD = 7.0\%$) receiving free or reduced-cost lunch. One tenth of their students ($SD = 9.0$) were receiving special education services, and the teachers indicated that 27% ($SD = 20.5\%$) of their students experienced difficulty with spelling. In addition, 65% ($SD = 35\%$) of the teachers' students were White, 16% Black ($SD = 27\%$), 13% Hispanic ($SD = 25\%$), 3% Asian ($SD = 9\%$), and 4% Other ($SD = 12\%$).

Survey Instrument

Teachers were asked to complete a questionnaire that included two parts: One part included questions about the teacher, the classroom, and the general spelling program, and the other assessed the types of adaptations

Table 1
Characteristics of Responders and Nonresponders

Variable	Responders		Nonresponders	
	<i>n</i>	%	<i>n</i>	%
Gender of teacher				
Male	8	5	4	5
Female	156	95	75	95
Grade				
First	50	30	23	29
Second	55	33	21	27
Third	46	27	31	39
Multiple grades	18	11	4	5
Location				
Urban	60	36	23	29
Suburban	49	30	29	37
Rural	56	34	27	34
Size of school				
<i>M</i>	412.5	—	396.4	—
<i>SD</i>	222.2	—	203.9	—
Expenditures per pupil				
<i>M</i>	158.8	—	164.3	—
<i>SD</i>	37.3	—	36.5	—

Note: Information on gender (164 responders, 79 nonresponders), grade (169 responders, 79 nonresponders), location (165 responders, 79 nonresponders), size of school (167 responders, 79 nonresponders), or expenditures per pupil (137 responders, 63 nonresponders) was unavailable for some teachers.

that teachers made for struggling spellers (the survey is presented in the appendix).

Background information and general classroom practices. Teachers were asked to provide information about number of years teaching, education, and composition of their class (i.e., class size, race of students, number of students who experience difficulty with spelling, number of students receiving special education services, and number of students receiving a free or reduced lunch). They were further asked to indicate how much time they spend teaching spelling, if they used a commercial spelling program, and if they expected students to master a list of spelling words each week. If teachers did use such list, they were asked to indicate the source for the words on the list (i.e., commercial spelling program, basal reading series, children's reading material, students' writing, or student-selected words).

Teacher adaptations. In the second section of the survey, we first asked teachers to indicate how many words stronger and weaker spellers studied each week. They were then asked to indicate how often they employed 20

specific spelling activities or practices, using a 7-point Likert-type scale. The Likert-type scale, developed by Pressley et al. (1996), included the following markers: 1 = *never*, 2 = *several times a year*, 3 = *monthly*, 4 = *weekly*, 5 = *several times a week*, 6 = *daily*, and 7 = *several times a day*. The higher the score, the more often an activity or procedure occurred. For each item, the respondent first indicated how often a particular activity or procedure was applied with stronger spellers and then how often it was applied with weaker spellers (this was done on separate scales). A difference between the treatment of weaker and stronger spellers was viewed as an adaptation, and such adaptation could involve providing more or less of an activity or instructional procedure to weaker spellers than stronger ones. Finally, respondents were asked to identify any additional adaptations that were provided to weaker spellers in their classroom beyond what they typically did with students. This provided teachers the opportunity to identify adaptations they were making that were not directly queried through the forced-response items.

The development of the second part of the survey involved six steps. First, we created a possible pool of items by identifying instructional practices used by teachers in previous research studying the teaching of spelling in the primary grades (e.g., Bridge, Compton-Hall, & Cantrell, 1997; S. Graham et al., 2003; Wharton-McDonald et al., 1998). Second, this was supplemented by examining current books and articles on the teaching of spelling (e.g., Bear, Invernizzi, Templeton, & Johnston, 2000; Gentry & Gillett, 1993; Moats, 1995) as well as reviews of the empirical literature on effective spelling practices for young children (e.g., S. Graham, 1999; Loomer et al., 1990). Third, a description of each instructional activity or procedure was developed, and we asked five primary-grade teachers to rate each item (using a 5-point Likert-type scale ranging from 1 point for *strongly disagree* to 5 points for *strongly agree*) on two dimensions: (a) primary-grade teachers typically use the activity or procedure and (b) the activity or procedure can be adapted to help weaker spellers. We included all items on our survey that had a mean of 4.0 on both dimensions, yielding 21 items. Fourth, we created an initial version of the survey, where one activity was answered by identifying the number of words stronger and weaker spellers study each week, and the other 20 items were answered via a Likert-type scale (see above). Fifth, we asked 3 primary-grade teachers to take the survey and record how long it took to complete it. They then reexamined the survey to provide suggestions for improving wording on specific items and the layout of the instrument. These suggestions were incorporated into a final version of the scale. Sixth, we examined the internal consistency of the 20 Likert-type items using the data from this study. Coefficient alpha was .83.

Five of the 21 activities or procedures asked teachers about their teaching of specific spelling skills and strategies (phonological awareness, phonics skills for spelling, strategies for determining the spelling of unknown words, spelling rules, and dictionary skills). With the exception of teaching dictionary skills, there is empirical evidence that all of these activities are effective with struggling spellers (see S. Graham, 1999; S. Graham et al., 2003).

Twelve items focused on how frequently teachers applied the following instructional procedures: reduce number of words studied each week, reteach spelling skills and strategies, use games to learn spelling skills, have students work together to learn spelling skills, use word-sorting activities to teach knowledge about spelling, apply computer programs to teach spelling, praise students' correct spelling, apply reinforcement and other motivational strategies to foster spelling performance, conference with parents about their child's spelling, teach spelling skills and strategies through minilessons as the need arises, use mnemonics for remembering the spelling of a difficult word, and conference with students about their spelling. There is empirical evidence that the first nine procedures listed above enhance the performance of weaker spellers (S. Graham, 1999; S. Graham et al., 2003). The final four procedures focused on spelling during writing. This included students' use of spell checkers, encouragement to use invented spellings, proofreading to correct spelling errors, and providing students with feedback on words misspelled while writing. Each of these practices was effective with weaker spellers in one or more empirical studies (Gettinger, 1993; S. Graham, 1999).

Procedures

A cover letter, the survey instrument, and a stamped return envelope were mailed to each teacher during the month of March. The cover letter indicated that we were conducting a survey to gather information on the teaching of spelling and types of adaptations made by teachers. Teachers were asked to return materials in the next 2 weeks if possible. To encourage completion and return of the materials, we included a \$2 bill in the package as a thank-you for taking the time to fill out and return the surveys.

Forty-nine percent of the teachers ($n = 122$) completed and returned the survey in the first mailing. The second mailing occurred during the 1st week of April and accounted for another 47 surveys (19%), bringing the grand total to 68%.

Results

Missing Data

Examination of the responses of the 169 teachers indicated that 129 of them had some missing data, although actual percentage of data missing across all surveys was small (mode = 1% of data missing). However, preliminary analysis of the missing data indicated patterns within subjects and across items, suggesting that missing data were not random (e.g., some participants had more missing data than others). Due to the number of participants affected and systematic properties of the missing data, neither listwise deletion nor simple regression imputation was considered a proper remedy. A multiple imputation of the missing values was completed using an expectation-maximization algorithm (see J. W. Graham & Hofer, 2000). After eliminating 1 outlying participant who was missing 81% of all data,

the SPSS missing-values module was employed. This procedure uses all information in the data set to impute values for missing data for all remaining participants ($n = 168$). This enhanced our ability to calculate unbiased parameter estimates while preserving statistical power (J. W. Graham, Taylor, & Cumsille, 2001).

Analyses

First, we examined teachers' responses to the classroom practice questions as well as the Likert-type items assessing how often teachers reported applying 20 spelling activities and instructional practices with stronger and weaker spellers in order to draw a general picture of primary-grade spelling instruction. Next, we examined the types of adaptations teachers made for weaker spellers. This second focus took three forms. One, we examined if there was a difference in how often teachers reported using each of the 21 spelling activities or procedures with stronger and weaker spellers. For each spelling activity or procedure, a one-way ANOVA (with type of speller as the independent variable) was conducted. We reasoned that if teachers were making an adaptation for a specific activity or procedure, then the respective F ratio should be statistically significant. Because of the large number of analyses (21), we set the alpha level at .01. A more conservative probability level was not set to help avoid the possibility of committing a Type II error. Skewness was evident for a majority of these items, so we also conducted each analysis using a nonparametric procedure (Mann-Whitney U test). The outcomes for the nonparametric and parametric analyses were identical; thus, we report only the findings from the ANOVAs here.

Although we expected few if any differences in how often first-, second-, and third-grade teachers reported using the activities and procedures surveyed (as most spelling materials apply the same basic formats and activities in the primary grades; see, for example, Gentry, 2007), we did examine if teachers' reported use of a practice was related to grade taught. Practices such as teaching phonemic awareness and teaching phonics for spelling might be more common in the earlier grades as students are just starting to break the code, whereas the use of a dictionary as a spelling aid may be more common once students have acquired initial competence with spelling. We found only three instances where reported use of a practice was statistically related to grade taught (i.e., teaching phonological awareness, teaching phonics skills for spelling, and reteaching skills and strategies, with teachers indicating that they applied each practice more often with younger students). In no instance was there an interaction between grade and type of speller; thus, scores presented in subsequent sections are averaged across grades.

A second way teachers' reported adaptations were examined was by categorizing and tabulating responses to the open-ended question asking them to identify additional adaptations made for weaker spellers (see further discussion of categorization procedures below). We included in this analysis only adaptations not previously identified via the forced-response items.

Finally, we calculated total number of reported adaptations made by a teacher. This score was based on responses to the forced-response and the open-ended questions. Any time a teacher marked a different score for stronger versus weaker spellers on a forced-response item, it was counted as an adaptation. These adaptations were summed with the number of new adaptations identified from the open-ended question. We also examined if there was a relationship between total number of adaptations and grade taught, school location (urban, suburban, and rural), and years spent teaching.

Spelling Instruction in the Primary Grades

Virtually all of the teachers reported teaching spelling, devoting an average of almost 90 minutes a week to this skill (time spent teaching spelling was not related to grade taught; $p = .09$). This is more than the 60 to 75 minutes per week recommended in previous reviews of the experimental literature (see, for example, Loomer et al., 1990). Nevertheless, there was considerable variability in reported teaching time ($SD = 70.64$ minutes). In addition, 4 teachers did not teach spelling at all (scattered across all three grade levels), 1 teacher devoted 2 minutes a week to it, and another 10 teachers spent only 10 to 20 minutes teaching it.

A slight majority of teachers (57%) reported using commercial materials to teach some aspect of spelling. These teachers reported using a wide range of spelling programs, including stand-alone programs as well as ones that were part of a basal reading program. Whether they reported using a spelling program or not, most teachers (90%) indicated students were expected to master a list of spelling words each week. The sources for the words on these lists were varied and overlapped somewhat: 66% of teachers indicated that words came from spelling programs, 37% from basal readers, 30% from the material students read, 26% from students' compositions, and 14% from student self-selection.

Table 2 presents how often teachers applied (ranging from *never* to *several times a day*) each of the 20 spelling activities and practices assessed with a Likert-type scale (tabulated for both stronger and weaker spellers). Five out of the 6 responding teachers reported using all but 2 of these activities and procedures sometime during the school year. The other 2 procedures, computer programs as an aid for learning spelling words or skills and mnemonics as an aid for remembering difficult spellings, were used by 65% and 74% of teachers, respectively, at some point in the academic year. These data provide additional verification that the 20 spelling activities and procedures are common elements of primary-grade spelling instruction.

On at a least a weekly basis, a majority of teachers reported applying 16 activities with either stronger or weaker writers. In order of frequency, these were praise for correct spelling (94%), teaching phonics skills for spelling (92%), instruction in phonological awareness (88%), minilessons to teach spelling skills and strategies (86%), teacher feedback on misspellings (84%), using spelling games to teach skills and strategies (83%), spelling rules

Table 2
How Often Primary-Grade Teachers Reported Using Specific Spelling Activities and Instructional Procedures

Spelling Activity or Instructional Procedure	Mean	Standard Deviation	Never (%)	Several Times a Year (%)	Monthly (%)	Weekly (%)	Several Times a Week (%)	Daily (%)	Several Times a Day (%)
Teach Specific Skills/Strategies									
Phonological awareness									
Stronger speller	4.83	1.29	1	5	7	22	29	31	5
Weaker speller	4.97	1.25	1	5	7	18	30	33	7
Phonics for spelling									
Stronger speller	4.82	1.35	3	5	4	26	27	30	6
Weaker speller	4.99	1.29	3	3	2	23	29	33	7
Strategies to spell unknown words									
Stronger speller	4.32	1.48	4	12	9	28	23	21	4
Weaker speller	4.45	1.50	4	10	9	26	24	21	6
Spelling rules									
Stronger speller	4.17	1.18	2	7	10	46	23	10	2
Weaker speller	4.21	1.21	3	7	9	45	23	13	2
Dictionary skills									
Stronger speller	3.11	1.35	10	29	20	29	7	4	2
Weaker speller	3.09	1.35	10	29	21	29	6	4	2
Instructional Activities									
Minilessons									
Stronger speller	4.55	1.38	2	8	7	27	27	24	4
Weaker speller	4.88	1.33	2	5	7	20	30	29	7

(continued)

Table 2 (continued)

Spelling Activity or Instructional Procedure	Mean	Standard Deviation	Never (%)	Several Times a Year (%)	Monthly (%)	Weekly (%)	Several Times a Week (%)	Daily (%)	Several Times a Day (%)
Reteaching ^a									
Stronger speller	3.71	1.27	2	18	23	29	21	5	1
Weaker speller	4.07	1.25	1	13	16	30	30	8	2
Spelling games									
Stronger speller	3.59	1.41	2	7	10	46	23	10	2
Weaker speller	3.68	1.43	3	7	9	45	23	13	2
Students work together									
Stronger speller	3.94	1.45	9	8	10	42	18	10	3
Weaker speller	4.00	1.48	10	7	9	41	20	11	4
Word sorting									
Stronger speller	3.29	1.49	17	16	17	27	19	5	0
Weaker speller	3.39	1.47	16	13	16	30	20	5	0
Computer to learn spelling									
Stronger speller	2.60	1.50	35	20	13	22	5	5	1
Weaker speller	2.70	1.60	34	18	12	23	8	5	1
Praise students for correct spelling									
Stronger speller	5.26	1.26	0	4	2	21	21	34	16
Weaker speller	5.41	1.26	0	3	2	23	21	31	22
Use mnemonics for hard words									
Stronger speller	2.95	1.62	26	19	14	23	13	4	2
Weaker speller	3.02	1.68	26	19	14	20	14	7	1
Reinforcement or motivation strategies to promote spelling									
Stronger speller	3.70	1.56	13	14	10	36	14	12	2
Weaker speller	3.79	1.58	11	15	8	34	18	12	2

(continued)

Table 2 (continued)

Spelling Activity or Instructional Procedure	Mean	Standard Deviation	Never (%)	Several Times a Year (%)	Monthly (%)	Weekly (%)	Several Times a Week (%)	Daily (%)	Several Times a Day (%)
Conferring with students^a									
Stronger speller	3.31	1.51	17	16	14	32	15	5	1
Weaker speller	4.18	1.45	6	10	9	32	28	13	4
Parent conferences^a									
Stronger speller	1.99	0.68	17	72	5	6	0	0	0
Weaker speller	2.29	0.79	8	68	12	11	1	0	0
Spelling When Writing									
Students use spell checkers									
Stronger speller	2.11	1.66	4	12	9	28	23	21	4
Weaker speller	2.11	1.66	4	10	9	26	24	21	6
Encourage invented spelling									
Stronger speller	4.74	1.84	11	5	4	19	14	35	13
Weaker speller	4.72	1.85	11	6	4	18	14	36	12
Student proofreading									
Stronger speller	4.20	1.40	5	6	18	30	20	19	2
Weaker speller	4.20	1.38	4	7	17	30	23	18	2
Teacher feedback on misspellings									
Stronger speller	4.80	1.40	3	3	10	25	23	29	8
Weaker speller	4.78	1.41	3	3	10	27	21	26	10

Note: never = score of 1; several times a year = score of 2; monthly = score of 3; weekly = score of 4; several times a week = score of 5; daily = score of 6; several times a day = score of 7.

^aStatistically significant difference between stronger and weaker writers ($p < .01$).

instruction (83%), encouraging invented spellings (80%), teaching strategies for spelling unknown words (77%), conferencing with students about their spelling (77%), student use of spell checkers (76%), students helping each other with spelling (76%), student proofreading theirs and others' compositions (71%), reteaching spelling skills and strategies (70%), reinforcement and motivational strategies to teach spelling (63%), and using word sorting to teach spelling (55%).

At least monthly, a majority of teachers reported teaching dictionary skills (62%) and using mnemonics as a way to help students remember difficult spelling words (56%). At least several times a year, most teachers indicated conferencing with parents about their child's spelling (92%) and using computer programs to help students learn spelling words and skills (82%).

Spelling Adaptations: From Forced-Choice Items

Table 2 presents means and standard deviations for stronger and weaker spellers for the 20 spelling activities and practices assessed via Likert-type scales. Because weaker spellers, by definition, experience difficulty mastering the task of spelling, we anticipated that teachers would provide more support and instruction to these students than to the stronger spellers in their classrooms. For the most part, this prediction was not supported by our analyses of the forced-response items, as only 3 of the 20 analyses were statistically significant. In contrast to stronger spellers, teachers reported conferencing more often with the parents of weaker spellers, $F(1, 334) = 29.00$; $MSe = 2.18$, $p < .001$ (Cohen's $d = .57$); conferencing more often with weaker spellers, $F(1, 334) = 13.11$; $MSe = .55$, $p < .001$ (Cohen's $d = .40$); and reteaching skills and strategies to these students, $F(1, 334) = 6.70$; $MSe = 1.58$, $p = .009$ (Cohen's $d = .28$).

There was also a statistically significant difference for the item that asked teachers to indicate how many words they assigned to weekly spelling lists for stronger and weaker spellers, $F(1, 334) = 54.05$; $MSe = 31.44$, $p < .001$ (Cohen's $d = .75$). Weaker spellers were assigned fewer words ($M = 10.3$; $SD = 4.3$) than stronger spellers ($M = 14.8$; $SD = 6.7$).

Additional Adaptations Identified Through the Open-Ended Question

Teacher responses to the open-ended question asking them to identify additional adaptations made for weaker spellers were tabulated and categorized by type. Excluded from this tabulation were any responses that named an adaptation already evident from the forced-response items (e.g., if a teacher wrote, "I provide extra time teaching spelling rules," and conjointly marked a different Likert score for stronger and weaker spellers on the question that specifically asked about teaching spelling rules, the open-ended response was not counted as an adaptation).

In total, 109 of the respondents (65%) provided 294 potential adaptations when responding to the open-ended question. Of these, 190 were determined to be unique. These 190 unique adaptations were then sorted into categories.

This process involved two steps. First, the first two authors read through all responses and identified 10 categories that captured the range of teacher responses. These categories were tutoring (from the teacher, another adult, or a peer), computer activities, modified spelling lists, modified procedures for teaching spelling words (flash cards, games, modified regular curricula addressing spelling, multiple minitests, brainstorming), spelling aids for writing (memory facilitation, lists of common words, personal lists of misspelled words), phonics or phonological awareness (explicit phonics, sound-based word games), homework or family connection (all activities sent home regardless of person implementing at home), additional materials (general dictionaries, unique materials not specific to phonics), and test modifications (additional time, preparation time, retesting, and test-scoring modifications not including motivational strategies related to test results).

Next, the second author categorized all responses using the categories just described. To establish reliability of the second author's scoring, 31% ($n = 32$) of teacher's responses (selected randomly) was independently rescored by a second rater. Reliability using Cohen's kappa for number of unique adaptations was .87 and .83 for the categorization of these unique adaptations.

The most frequent additional reported adaptation was tutoring or one-to-one help (32% of responses). This was followed by adaptations involving modified teaching procedures (24%). The next three most frequent adaptations focused on teaching phonics and phonological awareness to weaker spellers (11%), modifying the spelling lists (8%), and modifying homework assignments (8%). Less frequent adaptations included using spelling aids for writing (6%), modifying testing procedures (6%), using the computer to aid spelling (3%), and using additional spelling materials (2%). Only 1% of adaptations were classified as other.

Total Number of Adaptations

Total number of reported adaptations made by each teacher was calculated by summing (a) the number of forced-response items where a different score was marked for stronger and weaker spellers and (b) the number of additional adaptations obtained through our analyses of the open-ended question. For all teachers, the average number of adaptations from these two sources was 3.7. Number of reported adaptations was not significantly related to grade taught ($p = .07$) or to whether teachers worked in an urban, suburban, or rural district ($p = .11$). There also was no statistically significant relation between reported total adaptations and number of years spent teaching ($r = -.11$) or teachers' estimates of how many of their students experienced spelling problems ($r = -.05$). It is important to note that there was considerable variability in total reported adaptations, as the standard deviation was large when compared to the mean ($SD = 3.2$). When all adaptations were summed together (forced response and open-ended), 42% ($n = 70$) of the teachers reported making just 0 to 2 adaptations. Considered differently,

a total of 629 adaptations were reported by all teachers, and of these adaptations, 67% ($n = 422$) were accounted for by just 24% of teachers ($n = 41$).

Discussion

Do Primary-Grade Teachers Teach Spelling and How Do They Teach It?

Although this study mainly focused on primary-grade teachers' adaptations for struggling writers, it also yielded important information on how spelling is taught to young children nationwide. There are little data available on contemporary spelling practices with young children. Consistent with two other recent surveys (Cutler & Graham, in press; S. Graham et al., 2003) and our prediction, virtually all of the primary-grade teachers in this study reported teaching spelling. Only 2% of the teachers reported not teach spelling at all, and slightly more than 90% indicated that they taught spelling for at least 25 minutes per week. Thus, with the exception of a few participants, enough time was devoted to teaching spelling to allow teachers the opportunity to make adaptations for weaker spellers.

As a group, the participating teachers indicated that they spend 90 minutes a week teaching spelling. This exceeds the average of 60 minutes reported by primary-grade teachers in Cutler and Graham (in press) as well as the traditional recommendation, based on studies that manipulated teaching time (see Loomer et al., 1990), that 60 to 75 minutes a week should be devoted to teaching this skill. However, in both this and the Cutler and Graham (in press) investigation, there was considerable variability in reported teaching time. It is important to note that there was a sizable minority of teachers in this study (45%) who spent less than the empirically supported recommendation for teaching spelling, 60 to 75 minutes a week.

Although the present study did not query teachers on all possible aspects of their spelling instruction, the findings from the current study were consistent with our prediction that primary-grade spelling instruction is multifaceted, involving the teaching of a variety of skills as well as the application of many different activities and instructional procedures. In fact, there was considerable consistency in teachers' reports on how they taught spelling, with many activities and instructional procedures applied by 70% or more of the teachers at least weekly. This included students learning a new list of words each week and the teaching of phonological awareness, phonics for spelling, spelling rules, and strategies for spelling unknown words. Likewise, teachers reported providing minilessons, employing peer learning activities, and using games at least weekly to help students acquire new spelling words and skills. Teachers indicated they frequently praised students for correct spelling, provided feedback on the words children misspelled, and held conferences with students about their spellings. They also reported encouraging students to use invented spellings, spell checkers, and proofreading at least weekly. There is experimental research evidence that all but two of these practices enhance the spelling performance of students in general and struggling spellers in particular (see reviews by Loomer et al.,

1990; S. Graham, 1983, 1999; S. Graham & Miller, 1979; Wanzek et al., 2006). Such evidence is not available for conferencing with students and teaching minilessons as the need arises (neither of these techniques has been tested empirically).

Three other evidence-based practices (see Loomer et al., 1990; S. Graham, 1999) were applied by 50% of the teachers on a weekly basis. These were reteaching skills and strategies, word sorting, and reinforcement or other motivational strategies. In contrast, teachers reported that they applied the following two research-supported practices (see review by S. Graham, 1999) infrequently: (a) computer programs to teach spelling and (b) conferencing with parents. The primary-grade teachers in S. Graham et al. (2003) also indicated that they rarely used computers during the writing period. This infrequent use of computer technology is troubling and deserves further study.

Even though the majority of teachers reported that they frequently used a variety of research-supported practices to teach spelling, it is important to note that they also indicated that 27% of their students, on average, experienced difficulty with spelling. Thus, according to their estimates, there was a sizable proportion of students for whom their spelling instruction was not effective. One possible reason for why this was the case is that teachers may not apply these research-supported practices effectively—in the same way they were applied in the studies validating their effectiveness. It is also possible that the participating teachers combined these practices together in ways that reduced their effectiveness or placed too much emphasis on one procedure and not enough on another. We did not assess either of these possibilities, as the available research does not provide enough evidence to establish clear guidelines for how practices should be combined or if the practices we assessed are differentially effective. Because we did not conduct a comprehensive survey of all instructional practices in spelling, including research-validated procedures, such as the test-study-test method or the corrected-test method, for example (see S. Graham, 1983), it is further possible that teachers did not apply a number of important instructional procedures when teaching spelling, reducing the overall effectiveness of their efforts. Last, it is possible that teachers' knowledge of English orthography and spelling was incomplete, and this may have hampered the impact of their instruction (see Moats, 1995). Future research needs to examine a broader array of spelling practices, including additional research-supported procedures as well as the linkage between the use of such practices, teachers' knowledge, and spelling achievement.

Our findings further provide some insight into primary-grade teachers' theoretical orientations to spelling instruction. Very few of them appeared to embrace only a spelling-is-caught orientation, as almost all of them spent some time teaching children how to spell. Moreover, at least 2 out of every 3 teachers reported applying procedures that were consistent with two of the spelling-is-taught approaches: memorization (students learned a list of spelling words each week) and generalization (i.e., teaching phonemic

awareness, phonics skills for spelling, spelling rules, and strategies for spelling unknown words). In addition, 50% of them reported applying an activity (i.e., word sorting) that is commonly used as a tool in the third spelling-is-taught approach, developmental (Schlagel, 2007). As predicted, most primary-grade teachers' spelling instruction embraced multiple perspectives. However, additional research is needed to determine how much emphasis teachers also place on the spelling-is-caught approach. None of the items in this study provided data relevant to this orientation.

Do Primary Grade Teachers Adapt Instruction for Weaker Spellers?

On the basis of the S. Graham et al. (2003) investigation with writing, we expected that the primary-grade teachers in this study would report adapting their instruction for weaker spellers, but most of the reported adaptations would be made by a small percentage of teachers, with a sizable minority of teachers reporting few or no adaptations (0 to 2). These expectations were confirmed, as teachers as a group averaged 3.7 reported adaptations, but two thirds of these adaptations were made by just one fourth of the teachers, with 42% of teachers making virtually no adaptations. These figures are almost identical to S. Graham et al. (2003). Thus, only 1 in 4 teachers was highly sensitive to the needs of weaker spellers, whereas close to one half of them reported making few or no adjustments for these children.

Of the 21 spelling activities and procedures that were directly assessed in our survey, teachers reported making adaptations for only four: the number of words studied each week (fewer words with weaker spellers), how frequently teachers held conferences about spelling with both students and their parents (more often for weaker spellers and their parents), and how often they reteach spelling skills and strategies (more often with weaker spellers). With the exception of conferencing with students (which has not been tested experimentally), all three of these adaptations have improved the spelling performance of struggling spellers in one or more research studies (see S. Graham, 1999). It must be noted, however, that there was little practical difference between how often teachers reported reteaching skills and strategies and conferencing with parents of weaker and stronger spellers.

In contrast to S. Graham et al. (2003), primary-grade teachers in this study did not report encouraging the use of invented spelling more often with weaker than stronger students, nor did they report spending more time teaching phonics for spelling or strategies for spelling unknown words to weaker students. These differences did not appear to be related to how often teachers in the two studies emphasized each of these practices in their classroom, as all three were used frequently and at a similar rate in both investigations. The differences may be a consequence of how the items were worded (weaker "writers" in Graham et al., 2003, and weaker "spellers" in this study), reflect differences in who participated in the two studies, or represent a change in practices over time. Additional research is needed to resolve these discrepancies.

As in the S. Graham et al. (2003) investigations, teachers in this study generated a broad list of additional modifications when asked to describe other modifications they made for weaker spellers. On average, the teachers reported making one additional adaptation beyond what was directly assessed (39% of participants, however, did not report any additional adaptations). The most common other adaptation reported by respondents was the use of tutoring by the teacher, another adult, or a peer. This category accounted for one third of all additional adaptations (26% of all additional adaptations in S. Graham et al., 2003, involved tutoring). One fourth of the other reported adaptations involved modifying procedures for teaching spelling words. This was followed by adaptations in the teaching of phonics and phonemic awareness (11%), modifying the weekly spelling list (8%), assigning homework and making family connections (8%), supplying spelling aids for writing (6%), and modifying spelling tests (6%). Unfortunately, teachers rarely provided enough information about these additional adaptations for us to form judgments about their quality or effectiveness.

An important question raised by this study is why a sizable minority of teachers (42%) reported making few or no adaptations for weaker spellers. One possible reason was that they believed that their spelling program was so effective that adaptations were not needed. We think that this is an unlikely explanation, as teachers who provided two or fewer adaptations indicated that 29% of their students had difficulty with spelling.

It is also possible that these teachers did not view adaptations as particularly valuable and, consequently, were not willing to expend the energy needed to adjust their instruction for weaker spellers. A recent study by S. Graham, Papadopoulou, and Santoro (2006) provides some support for this contention. They examined the acceptability of the writing adaptations primary teachers reported employing in the S. Graham et al. (2003) investigation. Teachers were asked to rate each adaptation on five dimensions: effectiveness, suitability for struggling writers, possible negative impacts, their knowledge of how to implement, and time needed to implement. After controlling for teacher experience, class size, teacher efficacy, percentage of students with writing difficulties, and percentage of students with special needs, they found that these five dimensions accounted for 29% of the variability in teachers' reported use of 14 different adaptations. Thus, teachers were more likely to report making adaptations for struggling writers if they viewed writing modifications as acceptable. Future research needs to examine if these same factors influence teachers' reported and observed use of spelling adaptations.

Another possible reason why some teachers reported making few or no adaptations involves their knowledge about English orthography and spelling and how to teach this complex skill. Some teachers may feel that they do not know enough about spelling to risk modifying how they teach it. Unfortunately, we did not ask teachers about their prior preparation to teach spelling, nor did we try to determine the depth of their knowledge about spelling. Several recent national surveys, however, have asked teachers about

their preparedness to teach other aspects of writing. Eighty-eight percent of the primary-grade teachers in S. Graham et al. (2008) reported that they did not receive adequate preparation in their teacher preparation programs to teach handwriting. Likewise, 71% of the participating high school teachers in Kihara, Graham, and Hawkin (2008) indicated they received minimal to no preparation to teach writing during college, and 44% continued to report the same level of preparation when in-service and personal learning efforts were included too. Clearly, additional research is needed to assess teachers' preparedness to teach spelling and their knowledge about it, as the studies cited above suggest that many teachers are not adequately prepared to teach writing or its component skills.

Limitations and Assumptions

The present study was based on the assumption that primary-grade teachers would be aware of the elements of their teaching and would be able to relate this knowledge to questions about their teaching practices in the area of spelling, just as other professionals can relate what they do when queried about their actions (Diaper, 1989). Although these findings must be supplemented by research where teachers' practices and adaptations are observed and not just reported, it is important to note that other survey studies querying teachers about their literacy practices are corroborated by observations of these same teachers' classroom instruction (see, for instance, Bridge & Heibert, 1985; DeFord, 1985).

We also assumed that effective instruction for weaker spellers involves adapting instruction. This assumption would be less valid if the instructional programs used by teachers were so powerful that each child developed the spelling skills needed for success at her or his grade level. This is an improbable scenario, however, as there is no documentation that such a spelling program actually exists, and participating teachers indicated that 27% of their students experienced difficulties with spelling.

When we queried teachers about their use of selected activities and procedures with weaker and stronger spellers, it was tacitly assumed that an important dimension in providing instruction to young, struggling spellers involves adjusting the frequency or quantity of specific aspects of instruction. Although this assumption requires additional validation, providing extra spelling instruction to weaker spellers can boost these children's spelling performance (see Berninger et al., 1998; S. Graham et al., 2003).

Although the number of teachers who completed our survey and were included in the data analysis (168) was slightly less than the number (174) we estimated that we needed to have an adequate sample (see Method), this had a minimal impact on the confidence that can be placed in our findings (sampling error is now 5.1% instead of 5%). Although sampling error could have been reduced with a larger sample, the sampling error is well within acceptable ranges for survey research (Dillman, 2000). Moreover, it would have required a large increase in participants to significantly reduce sampling

error in this study. For example, a plus- or minus-1% sampling error in this investigation would require a 25-fold increase to 4,317 teachers sampled.

Last, it was possible that the procedures used to query teachers did not capture all of their adaptations. The forced-response questions did not cover all possible adaptations, and although we asked an open-ended question in order to obtain a more complete account, some teachers may still have failed to provide a full record. For instance, some adaptations may have not been identified because the teacher did not remember making them. Future research can address this problem, at least in part, by asking additional questions, applying direct observation, or using a combination of the two.

In summary, the findings from this study indicated that virtually all primary-grade teachers teach spelling, with the vast majority of them implementing a complex and multifaceted instructional program that uses a variety of research-supported procedures. In addition, some teachers are sensitive to the needs of weaker spellers, making a variety of adaptations for these students. A sizable minority of teachers, however, reported making few or no adaptations. Equally troubling was the finding that teachers indicated 27% of their students experienced difficulty with spelling, calling into question the effectiveness of their instruction.

Appendix Questionnaire

Dear Colleague,

We know very little about how teachers teach spelling and the types of adaptations they make for different children in their classrooms. To find out more about these topics, the Center to Accelerate Student Learning at the University of Maryland is conducting a survey with teachers from across the United States. **I would like to ask you to complete the attached questionnaire, and return it in the enclosed self-addressed stamped envelope. Please return the questionnaire in the next two weeks if at all possible.** You should be able to complete the questionnaire in 15 to 30 minutes. I have attached a \$2 dollar bill to the survey, to say thank you for completing the questionnaire. Thank you for taking the time to complete and return the questionnaire.

Section 1: Please complete the following questions

1. How many years have you taught? _____ What grade(s) do you currently teach? _____
2. Please check your highest educational level: _____ Bachelor _____ Masters _____ Doctoral
3. How many children are in your classroom? _____
4. How many children in your classroom receive a free or reduced lunch? _____
5. How many of the children in your classroom are:
_____ Asian _____ Black _____ Hispanic _____ White _____ Other
6. How many of the children in your classroom receive special education services? _____
7. How many children in your class experience difficulty with spelling? _____
8. During an average week, how many minutes do you spend **teaching** spelling? _____
9. Do you use a commercial program to teach spelling? _____ Yes _____ No
What program(s)? _____
10. Do students in your class study lists of spelling words? _____ Yes _____ No

If yes, please answer the following question:

Please check the source or sources for students' spelling words. _____ Spelling Series
_____ Basal Reader _____ Children's Reading Material _____ Students' Writing
_____ Student Selected Other: _____

(continued)

Appendix (continued)

Section 2:

If you answered yes to question 10 above, please answer the 2 questions below:

1. During an average week, how many words are studied by good spellers? _____

How many words are studied by weaker spellers? _____

Please place a check on the item that indicates how often you do the following.

2. Check how often you **confer with students** about their spelling.

Good Spellers: Never Several Times a Year Monthly Weekly Several Times a Week Daily Several Times a Day

Weaker Spellers: Never Several Times a Year Monthly Weekly Several Times a Week Daily Several Times a Day

3. Check how often you provide **spelling mini-lessons** on "things" students need to know right now—skills, words, rules, strategies, or whatever.

Good Spellers: Never Several Times a Year Monthly Weekly Several Times a Week Daily Several Times a Day

Weaker Spellers: Never Several Times a Year Monthly Weekly Several Times a Week Daily Several Times a Day

4. Check how often you **reteach** spelling skills or strategies that were previously taught.

Good Spellers: Never Several Times a Year Monthly Weekly Several Times a Week Daily Several Times a Day

Weaker Spellers: Never Several Times a Year Monthly Weekly Several Times a Week Daily Several Times a Day

5. Check how often your students use a **spell checker**.

Good Spellers: Never Several Times a Year Monthly Weekly Several Times a Week Daily Several Times a Day

Weaker Spellers: Never Several Times a Year Monthly Weekly Several Times a Week Daily Several Times a Day

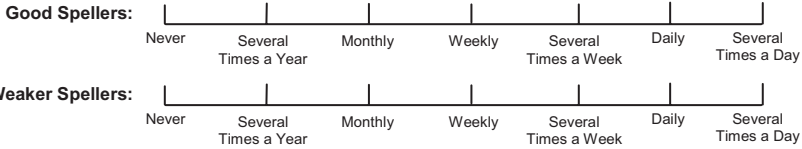
6. Check how often you teach **strategies for spelling unknown words** (e.g., writing a word out to see if it looks right, sounding it out, using a known word to help spell an unknown one, etc).

Good Spellers: Never Several Times a Year Monthly Weekly Several Times a Week Daily Several Times a Day

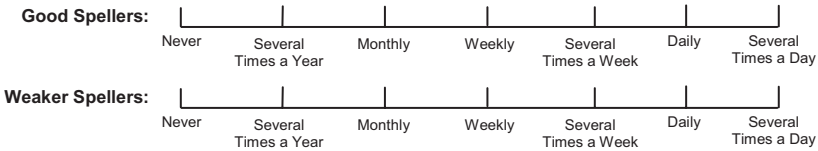
Weaker Spellers: Never Several Times a Year Monthly Weekly Several Times a Week Daily Several Times a Day

Appendix (continued)

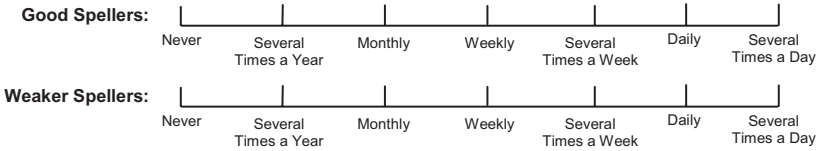
7. Check how often you teach **phonics for spelling**.



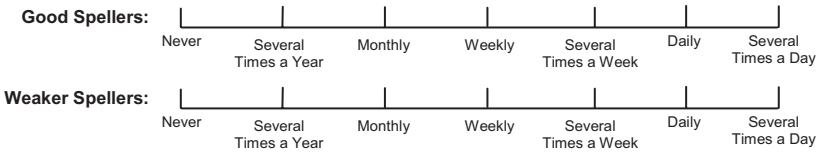
8. Check how often you encourage students to use **invented spellings**.



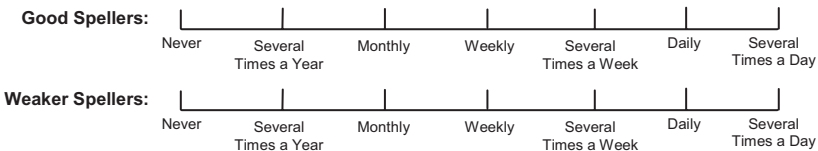
9. Check how often you teach **phonological awareness skills** (such as rhyming, identifying the individual sounds in a word, deleting or adding sounds in a word, substituting one sound for another in a word, and so forth).



10. Check how often your students **use games** to learn spelling words or skills.



11. Check how often **students work together** to learn spelling words or skills.



(continued)

Appendix (continued)

12. Check how often students in your class do **word sorting** activities (such as sorting words into different piles based on their spelling patterns, the sounds they begin or end with, and so forth).

Good Spellers:



Weaker Spellers:

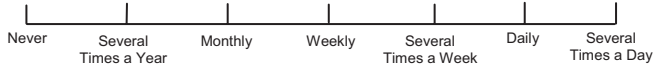


13. Check how often you **conference with parents** about their children's spelling.

Good Spellers:



Weaker Spellers:



14. Check how often you teach **dictionary skills** for spelling.

Good Spellers:



Weaker Spellers:



15. Check how often your students use the **computer** to help them learn new words or spelling skills.

Good Spellers:



Weaker Spellers:



16. Check how often you use **reinforcement or other motivational strategies** to promote spelling.

Good Spellers:

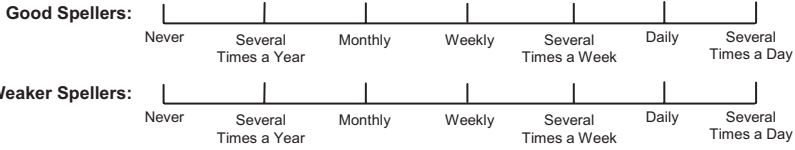


Weaker Spellers:

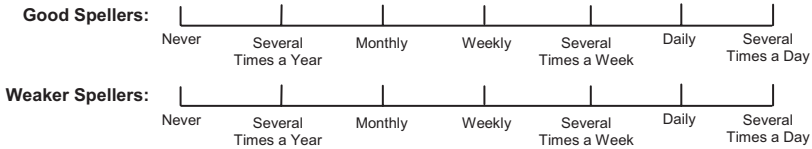


Appendix (continued)

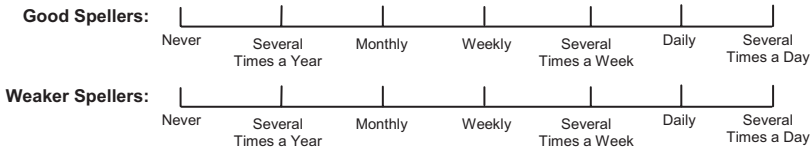
17. Check how often students are taught **spelling rules**.



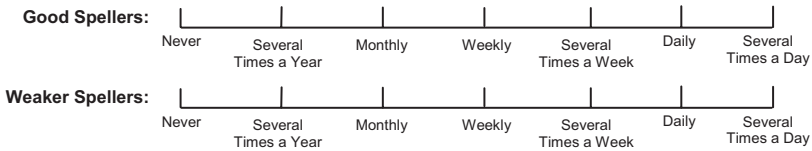
18. Check how often students **proofread** their writing or the writing of others to correct spelling errors.



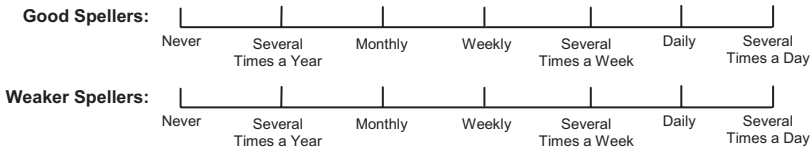
19. Check how often you teach students to use a **mnemonic** for remembering how to spell a difficult word.



20. Check how often you **show (circle, underline, etc.)** students the words that are misspelled in their writing



21. Check how often you **praise** students for correct spelling.



What types of **additional assistance/instruction** do you provide to students who are weaker spellers? **This is beyond what you typically do with students.** List as many examples as you can.

References

- Adams, M. (1990). *Beginning to read: Thinking and learning about print*. Cambridge, MA: MIT Press.
- Baker, J., & Zigmond, N. (1990). Are regular education classes equipped to accommodate students with learning disabilities. *Exceptional Children*, *56*, 515–526.
- Bear, D., Invernizzi, M., Templeton, S., & Johnston, F. (2000). *Words their way: Word study for phonics, vocabulary, and spelling instruction*. Upper Saddle River, NJ: Merrill.
- Berninger, V. (1999). Coordinating transcription and text generation in working memory during composing: Automatic and constructive processes. *Learning Disability Quarterly*, *22*, 99–112.
- Berninger, V., Mizokawa, D., & Bragg, R. (1991). Theory-based diagnosis and remediation of writing disabilities. *Journal of School Psychology*, *29*, 57–79.
- Berninger, V., Vaughn, K., Abbott, R., Brooks, A., Abbott, S., Rogan, L., et al. (1998). A multiple connections approach to early intervention for spelling problems: Integrating instructional, learner and stimulus variables. *Journal of Educational Psychology*, *90*, 587–605.
- Bridge, C. A., Compton-Hall, M., & Cantrell, S. C. (1997). Classroom writing practices revisited: The effects of statewide reform on writing instruction. *Elementary School Journal*, *98*, 151–170.
- Bridge, C. A., & Hiebert, E. H. (1985). A comparison of classroom writing practices, teachers' perceptions of their writing instruction, and textbook recommendations on writing practices. *Elementary School Journal*, *86*, 155–172.
- Corno, L., & Snow, R. (1986). Adapting teaching to differences among individual learners. In M. Wittrock (Ed.), *Third handbook of research on teaching* (pp. 605–629). New York: Macmillan.
- Cutler, L., & Graham, S. (in press). Primary grade writing instruction: A national survey. *Journal of Educational Psychology*.
- DeFord, D. (1985). Validating the construct of theoretical orientation in reading. *Reading Research Quarterly*, *20*, 351–367.
- Diaper, D. (1989). *Knowledge elicitation: Principles, techniques, and application*. New York: Wiley.
- Dillman, D. (2000). *Mail and internet surveys*. New York: Wiley.
- Ehri, L. (1987). Learning to read and spell words. *Journal of Reading Behavior*, *19*, 5–31.
- Fuchs, L., & Fuchs, D. (1998). General educators' instructional adaptations for students with learning disabilities. *Learning Disability Quarterly*, *21*, 23–33.
- Gentry, R. (2007). *Spelling connections*. Columbus, OH: Zaner-Bloser.
- Gentry, R., & Gillett, W. (1993). *Teaching kids to spell*. Portsmouth, NH: Heinemann.
- Gettinger, M. (1993). The effects of invented spelling and direct instruction on spelling performance of second-grade boys. *Journal of Applied Behavior Analysis*, *26*, 281–291.
- Graham, J. W., & Hofer, S. M. (2000). Multiple imputation in multivariate research. In T. D. Little, K. U. Schnabel, & J. Baumert (Eds.), *Modeling longitudinal and multilevel data: Practical issues, applied approaches, and specific examples* (pp. 201–218). Mahwah, NJ: Lawrence Erlbaum.
- Graham, J. W., Taylor, B. J., & Cumsille, P. E. (2001). Planned missing-data designs in analysis of change. In L. M. Collins & A. G. Sayer (Eds.), *New methods for the analysis of change* (pp. 335–353). Washington, DC: American Psychological Association.

- Graham, S. (1983). Effective spelling instruction. *Elementary School Journal*, 83, 560–567.
- Graham, S. (1999). Handwriting and spelling instruction for students with learning disabilities: A review. *Learning Disability Quarterly*, 22, 78–98.
- Graham, S. (2000). Should the natural learning approach replace traditional spelling instruction. *Journal of Educational Psychology*, 92, 235–247.
- Graham, S., & Harris, K. R. (2002). Prevention and intervention for struggling writers. In M. Shinn, G. Stoner, & H. Walker (Eds.), *Interventions for academic and behavior problems II: Preventive and remedial approaches* (pp. 589–610). Bethesda, MD: National Association of School Psychologists.
- Graham, S., & Harris, K. R. (2005, February). *The impact of handwriting and spelling instruction on the writing and reading performance of at-risk first grade writers*. Presentation at Pacific Coast Research Conference, San Diego, CA.
- Graham, S., Harris, K. R., & Fink-Chorzempa, B. (2002). Contributions of spelling instruction to the spelling, writing, and reading of poor spellers. *Journal of Educational Psychology*, 94, 669–686.
- Graham, S., Harris, K. R., Fink-Chorzempa, B., & MacArthur, C. (2003). Primary grade teachers' instructional adaptations for struggling writers: A national survey. *Journal of Educational Psychology*, 95, 279–292.
- Graham, S., Harris, K. R., Mason, L., Fink-Chorzempa, B., Moran, S., & Saddler, B. (2008). How do primary grade teachers teach handwriting: A national survey. *Reading and Writing: An Interdisciplinary Journal*, 21, 49–69.
- Graham, S., & Miller, L. (1979). Spelling research and practice: A unified approach. *Focus on Exceptional Children*, 12, 1–16.
- Graham, S., Papadopoulou, E., & Santoro, J. (2006, April). *Acceptability of writing adaptations and modifications in writing: A national survey*. Paper presented at the International Conference of the Council for Exceptional Children, Salt Lake City, UT.
- Kiuhara, S., Graham, S., & Hawkin, L. (2008). *Teaching writing to high school students: A national survey*. Manuscript submitted for publication.
- Loomer, B., Fitzsimmons, R., & Strege, M. (1990). *Spelling research and practice: Teacher's edition*. Iowa City, IA: Useful Learning.
- Marshall, J. C. (1967). Writing neatness, composition errors, and essay grades. *American Educational Research Journal*, 4, 375–385.
- Marshall, J. C., & Powers, J. M. (1969). Writing neatness, composition errors, and essay grades. *Journal of Educational Measurement*, 6(2), 97–101.
- McCutchen, D. (1988). "Functional automaticity" in children's writing: A problem of metacognitive control. *Written Communication*, 5, 306–324.
- Moats, L. (1995). *Spelling: Development, disability, and instruction*. Baltimore: York.
- Moats, L. (2005/2006). How spelling supports reading: And why it is more regular and predictable than you may think. *American Educator*, Winter, 12–43.
- Phillips, N., Fuchs, L., Fuchs, D., & Hamlett, C. (1996). Instructional variables affecting student achievement: Case studies of two contrasting teachers. *Learning Disabilities Research and Practice*, 11, 24–33.
- Pressley, M., Rankin, J., & Yokoi, L. (1996). A survey of instructional practices of primary grade teachers nominated as effective in promoting literacy. *Elementary School Journal*, 96, 363–384.
- Randi, J., & Corno, L. (2005). Teaching and learner variation. *British Journal of Educational Psychology*, 2, 47–69.
- Scardamalia, M., & Bereiter, C. (1986). Written composition. In M. Wittrock (Ed.), *Handbook of research on teaching* (3rd ed., pp. 778–803). New York: Macmillan.

- Schlagel, B. (2007). Best practices in spelling and handwriting. In S. Graham, C. MacArthur, & J. Fitzgerald (Eds.), *Best practices in writing instruction* (pp. 179–201). New York: Guilford.
- Schumm, J. S., & Vaughn, S. (1991). Making adaptations for mainstreamed students: General classroom teachers' perspectives. *Remedial and Special Education, 12*, 18–27.
- Stallings, J. (1995). Ensuring teaching and learning in the 21st century. *Educational Researcher, 24*, 4–8.
- Tobias, S. (1995). Interest and metacognitive word knowledge. *Journal of Educational Psychology, 87*, 399–405.
- Treiman, R. (1993). *Beginning to spell*. New York: Oxford University Press.
- Wanzek, J., Vaughn, S., Wexler, J., Swanson, E. A., Edmonds, M., & Kim, A.-H. (2006). A synthesis of spelling and reading interventions and their effects on the spelling outcomes of students with LD. *Journal of Learning Disabilities, 39*, 528–543.
- Wharton-McDonald, R., Pressley, M., & Hampston, J. M. (1998). Literacy instruction in nine first-grade classrooms: Teacher characteristics and student achievement. *Elementary School Journal, 99*, 101–128.

Manuscript received April 23, 2007

Revision received February 5, 2008

Accepted April 16, 2008