

Reading Alphabet Books in Kindergarten: Effects of Instructional Emphasis and Media Practice

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Abstract. This study compared literacy learning for kindergartners as 12 teachers read 10 popular alphabet books aloud, emphasizing meanings or phonemes, and used centers for independent practice with an alphabet book on audiotape or CD-ROM over a period of four weeks. Researchers taught half the teachers to read the books with an emphasis on phonemes represented by the letters and the other half to focus on meanings of words as the books were read. Within each meaning- or phoneme-emphasis group, teachers had students work with one of the alphabet books, Dr. Seuss's ABC, in a computer center with an animated CD-ROM, or in a listening center with an audiotape and print copy. A total of 152 kindergartners completed pre- and posttests measuring knowledge of vocabulary in the alphabet books, letter names, phonetic cue reading, and phoneme identities. Results for phoneme identities indicated a significant interaction between type of instructional emphasis and media practice. An emphasis on phonemes combined with practice reading the alphabet book while listening to the text on audiotape was significantly more effective than other treatment combinations. Statistically significant improvements from pre- to posttests on all measures suggested that alphabet books are useful materials for beginning literacy instruction.

As teachers and researchers, we conducted this study to explore learning outcomes when kindergarten children listened to alphabet books read aloud by teachers with either a meaning or phoneme emphasis and practiced independently by reading along with an audiotape or the CD-ROM version for one of the books. Reading aloud has a long history and sound theoretical support as an effective classroom practice (Huey, 1908; Snow, Burns, & Griffin, 1998; Teale, 1984) and, according to Beck and McKeown, "is probably the most highly recommended activity for encouraging language and literacy" (2001, p. 10). Research in the United States confirms that reading books aloud typically occurs daily across the elementary grades, but is most frequently practiced in kindergarten classrooms (Hoffman, Roser, & Battle, 1993; Lickteig & Russell, 1993).

For kindergarten children, alphabet books

frequently are recommended as read-aloud materials because of their potential to explicitly focus attention on print that builds letter-sound knowledge and on vocabulary that develops oral and written language (Fountas & Pinnell, 1996, 1998; McGee & Richgels, 1990; Tompkins, 2001; Yopp & Yopp, 2000). For these reasons, Camp and Tompkins (1990) championed alphabet books as read-aloud materials for emergent and beginning readers, hailing the genre as the "soldier of literacy" (p. 298). In spite of the high praise and wide recommendations for alphabet books, we found little research that actually examined the effectiveness of this genre for enhancing literacy learning, and all of the existing studies were done with preschool, not school-age, children.

In their study of two preschoolers, Yaden, Smolkin, and MacGillivray (1993) reported that the children were unable to associ-

ate beginning letters with sounds, even after repeated oral readings of alphabet books by parents. Using videotapes of an adult reading an alphabet book to a child, Horner (2001) found increased attention to print and larger gains on letter naming tasks when 4-year-olds viewed child models asking questions about print rather than pictures or models asking no questions at all. In another study with preschoolers, Murray, Stahl, and Ivey (1996) showed that read alouds with alphabet books produced significantly greater gains in phoneme awareness than read alouds with other types of children's books.

Relationships between vocabulary knowledge and reading achievement have been well established (Herman & Dole, 1988; McKeown, 1985), and a number of studies have demonstrated significant increases in children's vocabularies as a result of reading aloud (Brabham, Boyd, & Edgington, 2000; Elley, 1989; Leung, 1992). Most alphabet books have rich arrays of challenging words and concepts, so it seems logical to promote them as vocabulary builders for children who are learning to read (Tompkins & McGee, 1993; Yopp & Yopp, 2000). It appears, however, that these suggestions are justified more by optimism than by empirical evidence. In an extensive literature review, we were surprised to find no studies investigating the effects of reading alphabet books aloud on vocabulary acquisition for either preschool or school-age children.

This lack of research support for the use of alphabet books in beginning literacy instruction prompted us to conduct this study. Finding no studies that examined how teachers can effectively use this genre, we decided to compare two types of instructional emphasis and media practice for reading alphabet books in kindergarten classrooms to see if they produced different effects on vocabulary acquisition and other knowledge necessary for children to learn and apply the alphabetic principle—that written letters systematically represent phonemes in spoken words (Ball & Blachman, 1991; Byrne & Fielding-Barnsley, 1989, 1995).

A considerable body of research indicates that children's awareness of phonemes at the onset of formal reading instruction is the single most important predictor of later reading achievement (Adams, 1990; Juel, 1988; Share, Jorm, Maclean, & Matthews, 1984; Stanovich, 1986). In a summary of reading research since 1975, the National Research Council concluded that knowledge of letter names might be an even stronger predictor of reading success than phoneme awareness (Snow et al., 1998). Results reported by Murray et al. (1996) showed that alphabet books positively affected these two learning outcomes for preschool children, and they provided a starting point for this comparison of instructional emphasis and media practice for reading alphabet books with kindergartners.

Murray et al. (1996) assessed letter name knowledge and phoneme awareness for 42 four-year-olds in three classrooms before and after the teacher read storybooks or one of two types of alphabet books. Each class heard one type of book read aloud for 15 consecutive school days. One experimental group listened to traditional alphabet books, such as *Dr. Seuss's ABC*, that presented both names and example words for each letter. The other experimental group listened to books, such as *Chicka Chicka Boom Boom*, that presented letter names but no example words. Children in the control group listened to narrative storybooks, such as *The Cat in the Hat* and *Caps for Sale*. (References for all children's books cited and used in this study are in the Appendix.)

Murray et al. (1996) found that both experimental groups and the control group made statistically significant gains in letter name knowledge. On phoneme awareness assessments measuring ability to blend and segment onsets and rimes, students who listened to traditional alphabet books with example words for each letter made significantly greater gains than those exposed to books with letter names, but no example words or to storybooks. The researchers also noted that all three teachers focused on

meaning, whether they were reading storybooks or alphabet books. The two teachers who read alphabet books pointed to letters when they said their names but did not call students' attention to the letters' phonemic values, even when lots of example words afforded many opportunities for emphasizing sound-letter correspondences.

In the study reported here, we expanded on research questions addressed by Murray et al. (1996) in several ways. First, we recruited a larger number of children and teachers as participants and lengthened the treatment period by five days. We also limited the alphabet books read aloud to those with multiple example words for each letter and added a dependent variable measuring students' knowledge of vocabulary words repeated across several of the books. Instead of measuring children's blending and segmenting of onsets and rimes as an indicator of phoneme awareness, we assessed changes in whether they could match identical phonemes in two spoken words. To see how reading alphabet books in different ways might affect children's understandings of the alphabetic principle, we added a measure of ability to use first letters in words as phonetic cues for reading. We selected these measures of phoneme awareness and phonics because they correspond to knowledge most likely to be built by books in which each letter usually appears as the first letter of example words and in which phonemes are often exaggerated by alliteration.

To examine effects of teachers' instructional emphasis on meanings in alphabet books that was reported by Murray et al. (1996), we asked our teachers to read alphabet books using a deliberate emphasis either on meanings of example words or on phonemes that corresponded to letters named and used in examples. We also helped teachers set up independent practice centers so we could compare results when kindergartners followed the print and listened to an alphabet book read aloud on audiotape or on a computer-animated CD-ROM.

Significant gains in reading have been documented when children read print copies

of books while listening to the texts on audiotapes (Eldredge, 1995). Electronic CD-ROM storybooks, also, helped beginning readers acquire decoding skills and sight vocabulary (McKenna, Reinking, Labbo, & Watkins, 1996). Some children, however, stated preferences for readings rendered by human voice only, rather than CD-ROM readings with music and animation (Fernandez, 1999). In addition, observations of individual children indicated that superfluous audiovisual effects in many CD-ROM books foster passive viewing and interfere with attention to spoken and printed text (Kraft, 1997/98; Labbo & Kuhn, 2000). To compare effects of students' independent exposures to an alphabet book in these two multimedia formats, this study included daily practice in centers where students worked with *Dr. Seuss's ABC* on audiotape or on CD-ROM.

We extended previous investigations with alphabet books conducted in preschools to kindergarten for two reasons. First, kindergartners should be able to use information in alphabet books better than preschoolers because they have had more time to acquire the rudimentary knowledge of letters and sounds necessary for attending to, and learning from, incidental exposures to printed texts (Snow et al., 1998). To accommodate for kindergartners' greater knowledge of letters and avoid ceiling effects for this dependent variable, we assessed letter name knowledge only for lower case letters. Second, alphabet books are so widely recommended for reading aloud in kindergarten (Fountas & Pinnell, 1996, 1998; Tompkins, 2001; Yopp & Yopp, 2000) that we wanted to determine if different types of alphabet book readings have different effects on literacy learning at this grade level.

Identical sets of 10 books were given to all teachers who participated in this study. Each book included upper- and lowercase letters, at least two and usually many example words and illustrations for each letter, and a rich collection of vocabulary for kindergartners to learn. Book sets included *Dr.*

Seuss's ABC, which was representative of all the books because letters appear alone and in many example words. *Dr. Seuss's ABC* also was selected because of its availability in kits with book and audiotape, and in CD-ROM formats with animations and sound effects to accompany the printed text and oral reading.

Method

Participants and Setting

Subjects and teachers were recruited from 12 kindergarten classes at three elementary schools. The schools were part of the same state public school system, but they were from different districts in a 100-mile area in the southeastern United States. The community populations served by the schools ranged from 2,400 to 11,500 in size, and the majority of students in each came from working class families or families with socioeconomic conditions that qualified them for public assistance. For the majority of students, parental education levels were high school diploma, equivalency, or less. School sizes ranged from 206 to 780, and 50 percent to 82 percent of the students participated in free or reduced lunch programs for which eligibility was determined by family socioeconomic status. Class sizes ranged from 11 to 18 students.

To recruit teachers, researchers contacted three principals with whom they had professional associations, and the principals asked kindergarten teachers at their schools if they were willing to help with the study. At one school, two of the kindergarten teachers did not participate. Before the study began, one of the researchers had met one and another had met three of the participating teachers through different professional development or community contacts. However, the researchers were not acquainted with the specific teachers they taught to use a meaning or phoneme emphasis and for whom they provided materials for a center with *Dr. Seuss's ABC* on audiotape and in print or on CD-ROM. Teachers received no remunerations for their involvement, other than food and flowers available during sessions in

which they learned how to implement treatment conditions, and the alphabet books and center materials that they received and kept to use in their classrooms after the study was completed.

In each class involved in the study, only students whose parent or guardian signed a consent form giving permission to participate were involved in the study. After normal attrition due to absences, 152 students were present for all tests and 90 percent of the teachers' readings of the alphabet books. Descriptive information, with numbers of participants and percentages of the sample with pre- and posttest data, were as follows: 25 (16 percent), 53 (35 percent), and 74 (49 percent) students from the smallest to the largest of the three schools, respectively; a total of 70 (46 percent) males and 82 (54 percent) females; and 62 (41 percent) African Americans and 88 (58 percent) European Americans (ethnicity was not recorded for two children). In the participant pool, ages ranged from 5 years, 1 month to 6 years, 8 months, and the mean age was 5 years, 7 months. Two children were repeating kindergarten. Preschool programs were not available in public schools in these districts, so less than 10 percent of the subjects had attended any kind of instructional program before entering kindergarten.

Researchers interviewed participating teachers in their school and examined their classrooms before the study began. One-third of the teachers had earned master's degrees, and the rest had bachelor's degrees. All but one teacher had taught kindergarten for two or more years. Seven of the teachers had a decade or more of teaching experience; three had taught for five or more years; one was in the third year of teaching; and one was a first-year teacher. At all three schools, and regardless of experience, the teachers indicated that they felt responsible, and accountable to administrators, for actively engaging their kindergartners in a commercial reading program designed to teach rudimentary phoneme and phonics skills. Prior to the study, however, none of the teachers had systematically or intention-

ally incorporated alphabet book read-aloud experiences into the curriculum.

Although the three beginning reading programs were produced by different publishers, program materials in all 12 kindergarten classes included similar, wall-mounted alphabet strips and sequenced, scripted lessons and worksheets for teaching letter shapes, names, and phoneme correspondences. The materials also had pictures as cues for words beginning with each letter. Although this study was initiated in the first month of school, the teachers had already started involving kindergartners in songs, chants, and choral responses related to letters and pictures on alphabet strips and worksheets.

Each classroom had a library with two to five alphabet books and many more storybooks, but the teachers indicated that they rarely, if ever, read alphabet books aloud to children. None of the classrooms had a center featuring an alphabet book for students to work with independently. During interviews and our classroom visits, teachers expressed enthusiasm about learning to use alphabet books for reading aloud and appreciation for receiving the books and multimedia materials to supplement the commercial program with a wider array of learning materials and experiences for students.

Procedures

To allow students and teachers to adjust to each other and to having us in and out of the classrooms, we used the first weeks of the fall term to conduct interviews and observations and introduce the 12 teachers to the 10 different alphabet books and teach them to use one of two interactive reading styles (Klesius & Griffith, 1996). We conducted two, two-hour sessions in the schools. The reading coach in each school also attended these sessions and learned procedures for implementing treatments so they could report on the teachers' adherence to assigned conditions.

Teachers and students in intact classrooms were randomly assigned to treatment groups. Six teachers and classes were as-

signed to the meaning emphasis group and six to the phoneme emphasis group. Due to differences in size and access to working computers across classes, assignments of teachers and students to the two media type treatment conditions were not equal. In the meaning emphasis group, we assigned four teachers to the listening center condition with the book and audiotape and two to the computer center condition with the CD-ROM book. In the phoneme emphasis group, we assigned two teachers to the book-audiotape and four teachers to the CD-ROM treatment. To introduce each book, all 12 teachers practiced and used the following statement: "We're going to look at an alphabet book, a book about letters. Some children don't understand alphabet books, but you're going to learn how they work."

Six teachers were given directions and practiced procedures that emphasized the meanings of words as they read the alphabet books aloud. These teachers continued the introduction with: "The secret to these books is that each letter starts lots of new words. You'll find new words on every page of the alphabet book. When you learn the new words, you'll understand better and better what stories are saying." With each new page, meaning emphasis teachers practiced and then improvised on the following directions:

1. Point out the letter. Say, "The important words on this page start with [letter]. One of the important words is [word], and that means [simple definition]. Watch out for [word] as I read."

e.g., "One of the important words is *feather*, and that means the soft covering on a bird. Another important word is *four*. That's the number four we use to count—one, two, three, four."

e.g., "One of the important words is *itchy*, and that's how your skin feels when you have to scratch. Another important word is *ice*. That's what we have when water freezes."

2. Read the text on the page, emphasizing the target words. Point out pictures that are examples of words that are read and

discussed. After reading and pointing out several examples, invite the children to join in as you read the page.

3. Review: "What letter is this? What's the word with [letter] that means [simple definition]?"

4. Extension: Ask, "What other words begin with [letter]?"

The other six teachers were given directions and practiced procedures that emphasized the phonemes that correspond to letters and example words in the alphabet books. To the common introductory statement, these teachers added: "The secret to these books is that each letter tells your mouth how to move. A letter really stands for a mouth move. When you learn all the letters and their mouth moves, you'll be ready to learn to read words." With each new page, teachers practiced and then improvised on the following directions:

1. Point out the letter. Say, "[Letter] tells your mouth to say [phoneme]." Then tell the children to watch your mouth, and stretch or iterate (stutter) the phoneme in example words.

e.g., "F tells your mouth to say /fff/. Watch my mouth: Fffffour. Ffffathers."

e.g., "I tells your mouth to say /i/ or /I/. Watch my mouth: Iiiiity. Iiiiice."

2. Read text on page, emphasizing the target phoneme. Point out pictures that are examples of words that are read and discussed. After reading and pointing out several examples, invite the children to join in as you read the page.

3. Review: "When you see [letter], what's your mouth movement? What's a word with [phoneme]?"

4. Extension: "What other words have [phoneme]?"

In the phoneme-emphasis group, teachers were asked to vocally demonstrate and point out corresponding letters—for example, words featured in the alphabet books, most of which occurred in the initial position in those words. The few exceptions

include example words for letters, such as X, that occur more frequently in the middle or at the end of words, such as ax, extra, and fox. During the third or fourth week of school, students were given individually administered pretests that assessed familiarity with vocabulary taken from the 10 alphabet books, letter name knowledge, use of phonetic cues represented by initial letters in words, and identification of phonemes in initial, medial, and final positions in words. We elected to use these tests because they directly measure the knowledge and skills that may be taught when using alphabet books as instructional materials.

The three researchers listed as authors gave pretests and posttests with assistance from three graduate assistants whom we trained and supervised to use exactly the same directions and procedures. During this time, teachers received materials and our help setting up a listening or computer center with *Dr. Seuss's ABC* to support students' independent interactions with this alphabet book.

Numbers of students exposed to each treatment (meaning = 80 versus sound = 72; audiotape = 85 versus CD-ROM = 67) were unequal, because numbers of children for whom data were available varied from class to class. In each of the four combinations of two emphasis and two media types, we had the following numbers of participants: 1) 55 heard alphabet books read aloud with a meaning emphasis and used the audiotape and print copy of *Dr. Seuss's ABC* in a listening center; 2) 25 heard alphabet books read aloud with meaning emphasis and interacted with *Dr. Seuss's ABC* on CD-ROM in a computer center; 3) 30 heard alphabet books read aloud with a phoneme emphasis and used the audiotape and print copy of *Dr. Seuss's ABC* book in a listening center; and 4) 42 heard alphabet books read aloud with phoneme emphasis and interacted with *Dr. Seuss's ABC* on CD-ROM in a computer center.

All teachers read *Dr. Seuss's ABC* aloud the first day of the treatment period and then introduced a different alphabet book

every day for two weeks. During the next two weeks, one alphabet book was reread every day. In all, students heard each of the 10 alphabet books twice over 20 consecutive school days. Teachers in both read-aloud emphasis groups encouraged children to make comments and ask questions as they read. Throughout the four weeks, children cycled through the listening or computer center daily and read *Dr. Seuss's ABC* individually, in pairs, or in groups of three or four.

In each of the three schools, the reading coach observed readings and reported that teachers were reading the alphabet books and following the procedures assigned. At the end of the treatment period, about eight weeks after the school year began, we returned to each school and administered alternate forms of pretests as posttests. After the study, we asked teachers to respond to questionnaires about procedures and their implementation.

Instruments

Measurements of letter name knowledge were based on the letter identification task, with reliability and validity established by Marie Clay (1993). Clay's results indicated that most emergent readers master and reach ceiling performance on uppercase sooner than on lowercase letters. To maximize this task's value as a discriminating assessment and minimize time that children were pulled from class to take our test battery, Clay's instrument was modified and children were asked to name only the 26 lowercase letters.

Correlations supporting reliability and predictive validity for the Test of Phoneme Identities (TPI) were reported by Murray, Smith, and Murray (2000). Taking the TPI, students repeat a sentence and identify an isolated phoneme in two of the words. One TPI item, for example, asked the child to, "Say, I race to wash my face...Now say /f/. Do you hear /f/ in *race* or *face*?" For this study, abbreviated pre-posttest forms of the TPI were created. From the 38 original TPI items, we eliminated those with digraphs because they are not featured in

alphabet books and with phonemes that never appear alone in both initial and final positions in English words (e.g., /h/). We selected 9 salient consonants, 3 short vowels, and 3 long vowels, counterbalanced initial and final position so that one was included in the pretest and the other in the posttest; and mixed items targeting vowels in among items targeting consonants. In the 24 remaining items, target phonemes appeared in words as initial sounds eight times, medial sounds nine times, and final sounds seven times. The 24 items were distributed into two sets of 12 to develop parallel but different forms for the pretest and posttest.

Phonetic cue reading tasks have been used widely as reliable and valid assessments of development of the alphabetic principle and children's use of the first letters in words as cues for word identification (Byrne & Fielding-Barnsley, 1989; Ehri, 1991; Murray et al., 2000). In one phonetic cue reading item, the child was given a card with SAY printed on it and then asked, "Is this word *may* or *say*?" Items similar to this were used for 12-item phonetic cue reading pre- and posttests. On an alternate form posttest, printed and target words were switched so the pretest example above was changed; the card had MAY printed on it and the child was asked, "Is this word *may* or *say*?"

To produce an instrument with content validity and potential to reliably assess students' learning of vocabulary from the alphabet books to which they were exposed in this study, we developed an instrument modeled after the Peabody Picture Vocabulary Test (Dunn & Dunn, 1997). Words that occurred at least five times across the 10 alphabet books were selected for picture-vocabulary pre- and posttest items. The following 18 words were chosen: *apricot, asparagus, daffodil, dandelion, eel, eggplant, goggles, harp, hippopotamus, iris, unicorn, violin, violet, walrus, yacht, xylophone, yak,* and *zucchini*.

Pictures representing the 18 words were taken from images software or online

sources, rather than the alphabet books used in the study. Vocabulary items consisted of three pictures, one depicting the target and two showing distracters. Two random orders of items were constructed for vocabulary pre- and posttests. Examiners said, "I'm going to tell you a word from an alphabet book and show you three pictures. I want you to point to the picture that shows what the word means." Children's responses were recorded on score sheets.

Results

Analyses of variance (ANOVAs) were used to examine effects of type of instructional emphasis during readings of alphabet books (meaning or phoneme) and media used for independent practice in centers (audiotape or CD-ROM). We analyzed data that assessed students' knowledge of alphabet book vocabulary, letter names, phonetic cue reading, and phoneme identities before and after the four-week treatment. Since intact groups in 12 classrooms were assigned to

the combinations of treatments and levels, group means would have been an appropriate unit for statistical analyses (Levin, 1992). However, the small number of groups was insufficient to test treatment effects, so individual scores for the 152 students were used as units for analyses. Preliminary ANOVAs showed no statistically significant differences ($\alpha = .05$) among groups on pre-test scores and that effects of gender and ethnicity on pre- and posttest scores were not statistically significant.

Although the numbers of subjects in emphasis-by-media groups were not equal, Levene's test supported an assumption of homogeneity of variance for vocabulary pretests [$F(3, 148) = .142, p = .935$] and posttests [$F(3, 148) = .956, p = .415$], letter name pretests [$F(3, 148) = .816, p = .487$] and posttests [$F(3, 148) = 2.463, p = .065$], phonetic cue reading pretests [$F(3, 148) = .630, p = .597$] and posttests [$F(3, 148) = .278, p = .841$], and phoneme identities pretests [$F(3, 148) = .230, p = .876$] and post-

Table 1
Means and Standard Deviations for Scores on Tests of Effects of Reading Emphasis and Media Type

Test	Meaning ^a (<i>n</i> = 80)		Phoneme ^b (<i>n</i> = 72)	
	Pre M (SD)	Post M (SD)	Pre M (SD)	Post M (SD)
Alphabet Book Picture Vocabulary - 18 items				
Audio	8.78 (3.00)	11.87 (3.33)	8.27 (2.93)	11.63 (3.18)
CD-ROM	9.00 (3.06)	11.56 (3.85)	8.55 (3.07)	11.55 (3.72)
Letter Name Knowledge - 26 items				
Audio	12.24 (8.41)	19.26 (6.04)	12.63 (8.88)	19.13 (7.41)
CD-ROM	11.76 (8.58)	16.48 (7.87)	11.57 (9.07)	17.36 (8.39)
Phonetic Cue Reading - 12 items				
Audio	7.00 (1.95)	8.07 (2.49)	6.20 (1.85)	8.07 (2.36)
CD-ROM	6.80 (2.31)	8.48 (2.68)	6.57 (2.24)	7.71 (2.68)
Phoneme Identities - 12 items				
Audio	6.98 (1.96)	7.25 (2.09)	6.47 (2.22)	8.47 (2.05)
CD-ROM	7.52 (1.92)	7.64 (2.38)	6.93 (1.96)	7.07 (2.13)

^aAudio *n* = 55; CD-ROM *n* = 25. ^bAudio *n* = 30; CD-ROM *n* = 42.

tests [$F(3, 148) = .967, p = .410$]. For each of the dependent variables, Box's M tests (degrees of freedom = 9, 93714.8) produced the following values: 3.937 [$F = .426, p = .922$] for vocabulary; 8.989 [$F = .972, p = .461$] for letter names; 3.119 [$F = .337, p = .963$] for phonetic cue reading; and 8.041 [$F = .869, p = .552$] for phoneme identities. The values for Box's M tests indicated no significant differences and equality of variance-covariance matrices across groups. These results and examinations of histograms and plots supported assumptions required for repeated measures ANOVAs (Hair, Anderson, Tatham, & Black, 1998), and an alpha level of .05 was set for all subsequent tests.

To determine effects of treatments, a three-way ANOVA for one within-subjects variable, time of test, and two between-subjects variables, reading emphasis and media type, was conducted on each of the four dependent measures. Pre- and posttest scores were used for the within-subjects variable. Two levels of instructional emphasis, meaning or phoneme, and media practice, audiotape or CD-ROM, were between-subjects variables. Table 1 displays the means and standard deviations for pre- and posttest scores, numbers in each

treatment combination, and total items for each measure.

To examine internal reliability and validity of the tests we used as measures for dependent variables, we conducted statistical analyses of pre- and posttest scores. Reliability was determined by deriving test-retest correlations between the two forms and split-half coefficients for each test that were positive and statistically significant ($p = .01$). Results of these test-retest and split-half analyses, respectively, were: .79 and .87 for tests of letter name knowledge, .40 and .56 for tests of phonetic cue reading, .40 and .56 for tests of phoneme identities, and .73 and .84 for tests of alphabet book vocabulary knowledge. Predictive validity was indicated by high, positive correlations among all pre- and posttests with statistical significance (2-tailed) that ranged from $p = .003$ to $p = .000$.

Results in Table 2 show a main effect of time and indicate significant differences between pre- and posttest scores for within-subjects measures across all treatment groups. F values for differences due to time of test were significant at the $p = .000$ level on measures of alphabet book vocabulary, letter name knowledge, and phonetic cue reading, and at the $p = .001$

Table 2
F Values in Three-Way ANOVAs on Effects of Time of Test (T), Reading Emphasis (RE), and Media Type (M) on Alphabet Book Vocabulary (Vocab), Letter Name Knowledge (Letters), Phonetic Cue Reading (Phon Cue), and Phoneme Identities (Phon ID)

	Dependent Measures			
	Vocab	Letters	Phon Cue	Phon ID
T	214.597**	174.088**	43.940**	11.230**
RE	.350	.035	1.863	.151
M	.002	1.395	.029	.000
RE x M	.020	.006	.020	2.435
RE x T	.761	.090	.087	5.350*
M x T	1.197	2.737	.018	7.056**
RE x M x T	.040	.757	2.345	5.074*

Note. Degrees of Freedom = 2, 148.

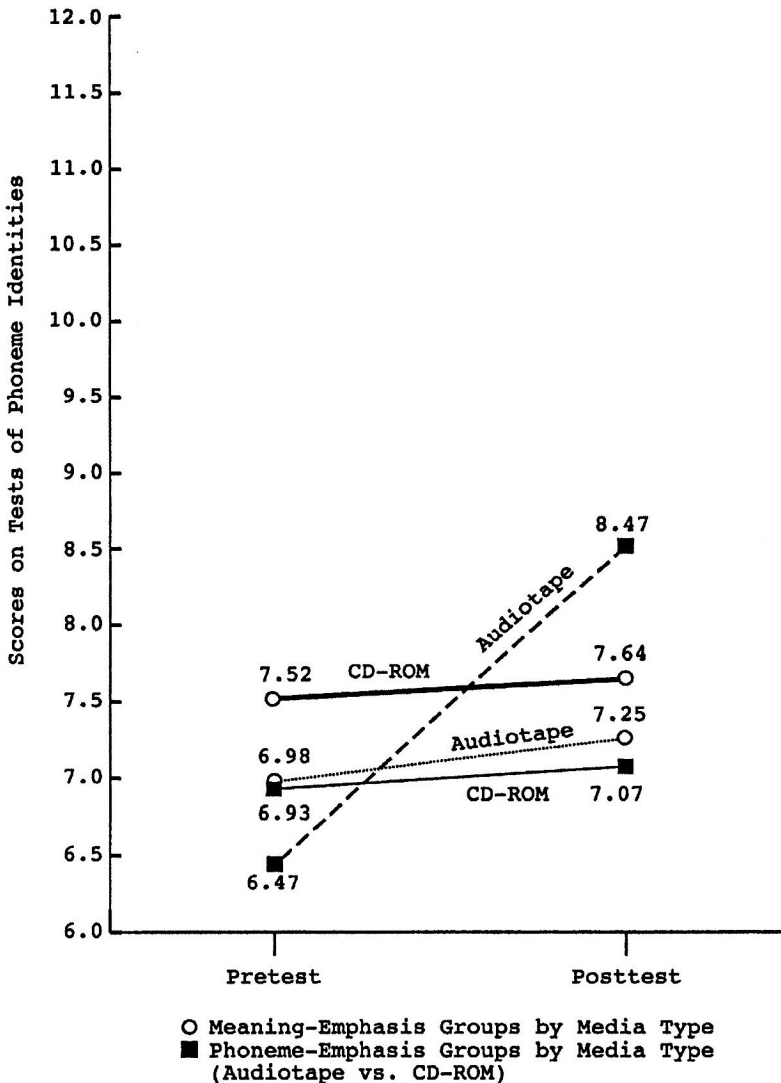
* $p < .05$; ** $p < .01$

level for phoneme identities. Effect sizes for time of test ranged from medium to small: $\eta^2 = .592$ for alphabet book vocabulary; $\eta^2 = .540$ for letter name knowledge; $\eta^2 = .229$ for phonetic cue reading; and $\eta^2 = .071$ for phoneme identities.

Table 2 also shows results of between-subjects tests. There was not a significant main effect of reading emphasis or media type on pre- and posttest scores measuring changes in knowledge of alphabet book vocabulary, letter names, or phonetic cue

reading. Analyses of pre-to-posttest gains on tests of phoneme identities, however, revealed significant effects of reading emphasis and of media type with a significant emphasis-by-media interaction. Although the F values for effects on tests of phoneme identities were significant for reading emphasis with $p = .022$, media type with $p = .009$, and the emphasis-by-media interaction with $p = .026$, effect sizes were small and estimated at $\eta^2 = .035$, $\eta^2 = .046$, and $\eta^2 = .033$ respectively, for each variable.

Figure 1
Graph of the Statistically Significant ($p = .026$) Interaction Between Instructional Emphases and Media Practice for Alphabet Books Read Aloud in Kindergarten Classes



Between-subjects effects reported above indicated that pre- and posttest scores on tests of phoneme identities produced by practice in listening centers with audiotapes and print copies of *Dr. Seuss's ABC* were statistically different and greater than those produced by practice in computer centers with CD-ROM storybook versions of the book. On the tests of phoneme identities, differences between a phoneme and meaning emphasis for reading alphabet books aloud were less substantial but statistically significant and larger for subjects in the phoneme emphasis condition. The statistically significant interaction between emphasis and media type, however, called for closer examination of results (see Figure 1). Within the phoneme-emphasis condition, practice with books in audiotape-print formats, rather than interactive CD-ROMs, accounted for most pre-to-posttest increases on tests of phoneme identities.

Surveys with questions about procedures and their implementation were mailed to teachers right after the study, with an addressed and stamped return envelope, but only six of the 12 teachers returned the questionnaires. For each combination of reading emphasis and media type treatments, one or two teachers provided written comments. These teachers reported how often and in what ways students used centers, and confirmed that students worked with *Dr. Seuss's ABC* daily. All of the respondents indicated that they followed assigned procedures for reading alphabet books with either a phoneme or meaning emphasis during the treatment period, but they described the way they naturally read alphabet books to their classes as a style that combined emphases on the phonemes or sounds and the meanings for words.

Discussion

Results of this study showed statistically significant improvements in kindergartners' abilities to identify letters and phonemes, use letters as phonetic cues for word identification, and acquire vocabulary during the four weeks when their teachers

read alphabet books aloud. This study demonstrated that the way alphabet books were read aloud by teachers and were worked with independently by students made a difference in children's acquisition of phoneme awareness. Statistically significant differences in pre- and posttest scores for phoneme identities showed that reading alphabet books aloud with a phoneme emphasis produced greater gains in phoneme awareness than reading aloud with a meaning emphasis. Our results also revealed that independent practice with an alphabet book on audiotape resulted in greater gains in phoneme awareness than practice with the book on CD-ROM.

In addition, we found a significant interaction between reading emphasis and media type for scores on tests of phoneme identities. For students in the phoneme-emphasis condition graphed in Figure 1, practice with the print book and audiotape accounted for more gains on tests of phoneme identities than practice with the CD-ROM book, suggesting that children may have been less able to consolidate the potentially positive effects of phoneme-emphasis readings when they had access to the lively media on the CD-ROM alphabet book.

It is possible that entertaining features of the CD-ROM may have interfered with acquisition of phoneme awareness and perhaps even the other learning outcomes we examined. For all four measures reported in Table 1, averages (across emphasis groups) in differences between pre- and posttest scores were slightly higher for children in audiotape-book listening centers than for children in computer centers with the CD-ROM book. With the click of a mouse, the child could activate animations, music, and a variety of sound effects on the CD-ROM. Although these electronic elements surely added fascination to interactions with the alphabet book, they may have contributed less than audiotape readings and the printed book to children's learning of vocabulary, letter names, and phonetic cues, or to their knowledge of phoneme identities. However, the differences produced

by the type of reading emphasis and media practice on variables other than phoneme identities were not statistically significant. On measures of kindergartners' knowledge of alphabet book vocabulary, letter names, and how to use initial letters in words as phonetic cues for reading, there were statistically similar gains, whether children heard alphabet books read with a meaning or phoneme emphasis or whether they practiced reading *Dr. Seuss's ABC* with the book and audiotape or the CD-ROM storybook.

Children's gains in letter knowledge were general across all groups and may have resulted from a curricular focus on these literacy fundamentals as much as, or even more than, reading the alphabet books. Letter naming depends on learning a set of features, such as that /m/ is made with a short line down, followed by two humps. These features are probably best learned through guided printing (Adams, 1990), rather than by seeing the letters in alphabet books.

Rudimentary decoding skills demonstrated in phonetic cue reading tasks (e.g., Is this word [SAD] sad or mad?) depend on secure knowledge of relevant phoneme identities (here /s/ and /m/), letter recognition (here of S and M), and grapheme-phoneme correspondence (Byrne, 1998). For most students in this study, these prerequisites for decoding and using the alphabetic principle had not been achieved. Because a phoneme emphasis for reading alphabet books influenced only children's knowledge of phoneme identities, and that in a limited way, it was not surprising that reading aloud with a phoneme emphasis did not help children learn more about how to crack the alphabetic code.

We were surprised, however, that a meaning emphasis did not produce significantly greater gains than a phoneme emphasis for learning such vocabulary words as *yak*, *zucchini*, and other uncommon words that are commonly found only in alphabet books. A likely explanation is that a meaning emphasis is a natural style for alphabet book reading. In the study by Murray et al. (1996), teachers were not instructed

to read alphabet books in any particular way, yet all of them spontaneously called students' attention to word meanings as they read. Thus, it is possible that teachers, in response to students' questions and comments, discussed meanings as well as phonemes as they read the alphabet books, in spite of the instruction, directions, and practice received as preparation for implementing the phoneme-emphasis condition in this study.

The statistically significant interaction and treatment effects for reading emphasis and media type on tests of phoneme identities and significant gains from pre- to posttest on all measures did not produce large effect sizes. However, even small effects can be instructive in educational research if they suggest alternative, and more effective, approaches for improving learning outcomes. Examining the effect sizes, we became aware of limitations that might have minimized the power of reading alphabet books as an intervention aimed at increasing students' vocabulary, letter name knowledge, use of phonetic cues for reading, and ability to identify phonemes.

Limitations of the Study

Although this study revealed statistically significant gains in kindergartners' knowledge of letters and phonemes, use of initial letters as phonetic cues for word identification, and acquisition of vocabulary during the treatment period, we cannot conclude that alphabet book readings alone caused the significant differences and small-to-medium effect sizes produced during the time between pre- and posttests. These results do indeed lend support to recommendations that the alphabet book is useful as a "soldier of literacy" (Camp & Tompkins, 1990, p. 298). However, all groups were involved in alphabet book readings in this study. Without a group that did not have deliberate, daily exposure to alphabet books, it was not possible to control for effects of other aspects of the curricula that also might have been responsible for gains in all four key components of literacy that we measured.

Teachers in this study read alphabet books aloud every school day for a month, but even four weeks might have been too short a time to adequately compare conditions and assess treatment effects for all of the dependent variables. Children only heard each of the 10 books twice. Due to the fact that there was only one listening or computer center in each classroom, children's independent practice with *Dr. Seuss's ABC* was limited to one session a day in most cases and less if the student was absent a day or two. Reports from reading coaches and teachers' responses to the survey confirmed that all students accessed *Dr. Seuss's ABC* in listening or computer centers daily, but time periods devoted to centers and methods used to rotate students among center activities differed from class to class.

We did not conduct in-classroom visits to evaluate teachers' adherence to the assigned reading emphasis condition and students' use of media during the treatment period. In the absence of researcher-conducted observations as fidelity checks, we cannot be certain that reading coaches' and teachers' self-reports reflect how the alphabet books were actually read or how much all students actually used the listening and computer centers. Another shortcoming of this study is the fact that only half of the teachers responded in writing to questions about procedures and implementation, probably because surveys were mailed and we did not personally contact the teachers, and so they did not respond.

As in the previous study of alphabet books with preschool teachers (Murray et al., 1996), kindergarten teachers in this study reported that reading alphabet books every day became less than gripping for them as readers and for students as participants over the course of the study. Unlike other picture books, alphabet books usually lack a story structure to engage students' imaginations in a plot or problem-solving quest. The fact that teachers and students became less enthusiastic about participating in daily read alouds with alphabet books over

the four-week treatment period also may have been a factor that limited outcomes and differences in treatment effects.

Conclusions

In spite of the limitations in this study, the significant interaction between reading emphasis and media type suggests a particular combination of approaches for teaching phoneme awareness by reading alphabet books aloud. If teachers combine an instructional emphasis on phonemes for letters in words when reading and a listening center for practice in which students follow the print and hear the audiotape version, alphabet books may be more likely to produce gains in students' ability to identify phonemes than if teachers emphasize meanings during reading and provide interactions with the CD-ROM storybook. The statistically significant interaction between reading emphasis and media type requires that we use caution, however, in drawing conclusions about the main effects of treatments on tests of phoneme identities. More experimental investigations are needed to see if results for each treatment can be replicated with effect sizes that warrant recommending either standing alone as an effective way to teach phoneme awareness with alphabet books. Even so, significant differences and modest effect sizes suggest that kindergarten children are more likely to learn to identify phonemes in spoken words when alphabet books are: 1) read aloud by teachers who explicitly call attention to the mouth moves signaled by letters and embedded in example words, and who ask children to generate their own example words; and 2) independently practiced with an audiotape recording and print copy in a listening center.

Our findings support the use of books and audiotapes rather than CD-ROM storybooks for teaching phoneme awareness, and they corroborate reports based on naturalistic observations and research suggesting that the entertaining features and options on CD-ROM storybooks distract children and limit learning outcomes (Kraft, 1997/98;

Labbo & Kuhn, 2000). However, both naturalistic and experimental studies conducted over longer periods of time will be necessary for a thorough and rigorous examination of the effects of media type on learning.

Although this study did not include a no-alphabet-book condition that might allow us to determine if reading alphabet books aloud enhances learning more than curricula without alphabet book read alouds, we did find significant differences and sufficient effect sizes between pre- and post-tests to provide evidence that kindergarten curricula enriched with alphabet books may substantially increase vocabulary, letter naming, phonetic cue reading, and phoneme identification skills. However, carefully controlled, experimental studies are needed to examine any causal relationships that may exist between alphabet books and learning outcomes and to establish a research base that can be used to justify or debunk widespread recommendations for using alphabet books as instructional materials for emergent and beginning readers.

We also need further studies to explore how alphabet books should be read to produce different learning outcomes. Typical routines in which a teacher or parent reads an entire alphabet book in a single session may promote emergent reading but not be optimal for children's learning. Reading an alphabet book in one sitting may put too much demand on attention and defeat instructional purposes aimed at helping children acquire knowledge of vocabulary, letter names, phonemes, and the alphabetic principle. In the case of phoneme identities, for example, reading an entire alphabet book may overload children's attention by providing too much information at once. Using a single page in a lesson on a particular phoneme may be more productive. Learning that "BIG F" and "little f" tell your mouth to say /f/, as in "Four fluffy feathers on a Fiffer-feffer-feff," will likely help children to identify the phoneme /f/ and find /f/ in several spoken word contexts. However, if the reader presents this page after those for the first five letters in the alphabet, goes on

to letter G with "Goat, girl, googoo goggles, G . . . g . . . G," and then reads pages for the remaining 17 letters, children may find this welter of information confusing and overwhelming.

Our results show that teachers can combine a phoneme emphasis with listening center activities for reading alphabet books aloud to produce significant increases in students' learning of phoneme identities. Perhaps more important and interesting is the fact that these findings lead us to additional research questions about how alphabet books can be used to greatest advantage by teachers and students in preschool, kindergarten, and the elementary grades. This study extends our knowledge about the instructional effectiveness of alphabet books and establishes a broader base for empirical investigations of classroom reading practices and technologies that capitalize on alphabet books as a means for promoting children's knowledge of vocabulary, letters, phonemes, and how all of these elements work together as children learn to read.

References

- Adams, M. J. (1990). *Beginning to read: Thinking and learning about print*. Cambridge, MA: MIT Press.
- Ball, E., & Blachman, B. (1991). Does phoneme awareness training in kindergarten make a difference in early word recognition and developmental spelling? *Reading Research Quarterly*, 26, 49-66.
- Beck, I., & McKeown, M. (2001). Text talk: Capturing the benefits of read-aloud experiences for young children. *The Reading Teacher*, 55, 10-20.
- Brabham, E., Boyd, P., & Edgington, W. (2000). Sorting it out: Elementary students' responses to fact and fiction in informational storybooks as read alouds for science and social studies. *Reading Research and Instruction*, 39, 263-286.
- Byrne, B. (1998). *The foundation of literacy: The child's acquisition of the alphabetic principle*. Hove, UK: Psychology Press.
- Byrne, B., & Fielding-Barnsley, R. (1989). Phonemic awareness and letter knowledge in the child's acquisition of the alphabetic

- principle. *Journal of Educational Psychology*, 81, 313-321.
- Byrne, B., & Fielding-Barnsley, R. (1995). Evaluation of a program to teach phonemic awareness to young children. A 2- and 3-year follow up and a new preschool trial. *Journal of Educational Psychology*, 87, 488-503.
- Camp, D., & Tompkins, G. (1990). The abecedarious: Soldier of literacy. *Childhood Education*, 66, 298-302.
- Clay, M. (1993). *An observation survey of early literacy achievement*. Portsmouth, NH: Heinemann.
- Dunn, L. M., & Dunn, L. M. (1997). *Peabody picture vocabulary test*. Circle Pines, MN: American Guidance Services.
- Ehri, L. (1991). Development of the ability to read words. In R. Barr, M. Kamil, P. Mosenthal, & P. D. Pearson (Eds.), *Handbook of reading research* (Vol. 2, pp. 383-417). White Plains, NY: Longman.
- Eldredge, J. L. (1995). *Teaching decoding in holistic classrooms*. Englewood Cliffs, NJ: Merrill.
- Elley, W. B. (1989). Vocabulary acquisition from listening to stories. *Reading Research Quarterly*, 4, 174-187.
- Fernandez, M. (1999). Electronic versus paper: Do students learn from electronic storybooks? *Learning & Leading With Technology*, 26, 32-34.
- Fountas, I. C., & Pinnell, G. S. (1996). *Guided reading: Good first teaching for all children*. Portsmouth, NH: Heinemann.
- Fountas, I. C., & Pinnell, G. S. (1998). *Word matters: Teaching phonics and spelling in the reading/writing classroom*. Portsmouth, NH: Heinemann.
- Hair, J., Anderson, R., Tatham, R., & Black, W. (1998). *Multivariate data analysis*. Upper Saddle River, NJ: Prentice Hall.
- Herman, P., & Dole, J. (1988). Theory and practice in vocabulary learning and instruction. *The Elementary School Journal*, 89, 43-54.
- Hoffman, J., Roser, N., & Battle, J. (1993). Reading aloud in classrooms: From the modal toward a model. *The Reading Teacher*, 46, 496-503.
- Horner, S. (2001). The effects of observational learning on preschoolers' alphabet knowledge. *Child Study Journal*, 31, 1-11.
- Huey, E. (1908). *The psychology and pedagogy of reading*. New York: Macmillan.
- Juel, C. (1988). Learning to read and write: A longitudinal study of 54 children from first through fourth grades. *Journal of Educational Psychology*, 80, 437-447.
- Klesius, J., & Griffith, P. (1996). Interactive storybook reading for at-risk learners. *The Reading Teacher*, 49, 551-560.
- Kraft, E. (1997/1998). Killing the text, digitally. *The Reading Teacher*, 51, 337.
- Labbo, L., & Kuhn, M. (2000). Weaving chains of affect and cognition: A young child's understanding of CD-ROM talking books. *Journal of Literacy Research*, 32, 187-210.
- Leung, C. (1992). Effects of word-related variables on vocabulary growth through repeated read-aloud events. In C. Kinzer & S. McCormick (Eds.), *Literacy research, theory, and practice: Views from many perspectives* (pp. 499-503). Chicago: National Reading Conference.
- Levin, J. (1992). On research in classrooms. *Mid-Western Educational Researcher*, 5, 2-6 & 16.
- Lickteig, M., & Russell, J. (1993). Elementary teachers' read-aloud practices. *Reading Improvement*, 30, 202-208.
- McGee, L., & Richgels, D. (1990). *Literacy's beginnings: Supporting young readers and writers*. Boston: Allyn & Bacon.
- McKenna, M., Reinking, D., Labbo, L., & Watkins, J. (1996). *Using electronic storybooks with beginning readers*. (National Reading Research Center Instructional Resource No. 39). Athens, GA: Universities of Georgia and Maryland College Park.
- McKeown, M. (1985). The acquisition of word meanings from context by children of high and low ability. *Reading Research Quarterly*, 20, 482-496.
- Murray, B. A., Smith, K. A., & Murray, G. G. (2000). The test of phoneme identities: Predicting alphabetic insight in prealphabetic readers. *Journal of Literacy Research*, 32, 421-447.
- Murray, B. A., Stahl, S. A., & Ivey, M. G. (1996). Developing phoneme awareness through alphabet books. *Reading and Writing: An Interdisciplinary Journal*, 8, 307-322.

- Share, D., Jorm, A., Maclean, R., & Matthews, R. (1984). Sources of individual differences in reading acquisition. *Journal of Educational Psychology, 76*, 1309-1324.
- Snow, C. E., Burns, M. S., & Griffin, P. (1998). *Preventing reading difficulties in young children*. Washington, DC: National Academy Press.
- Stanovich, K. E. (1986). Matthew effects in reading: Some consequences of individual differences in the acquisition of literacy. *Reading Research Quarterly, 21*, 360-406.
- Teale, W. (1984). Reading to young children: Its significance for literacy development. In H. Goelman, A. Oldberg, & F. Smith (Eds.), *Awakening to literacy* (pp. 110-121). Exeter, NH: Heinemann.
- Tompkins, G. (2001). *Literacy for the 21st century*. New York: Prentice Hall.
- Tompkins, G., & McGee, L. (1993). *Teaching reading with literature*. New York: Merrill/MacMillan.
- Yaden, D., Smolkin, L., & MacGillivray, L. (1993). A psychogenetic perspective on children's understanding about letter associations during alphabet book readings. *Journal of Reading Behavior, 25*, 43-68.
- Yopp, R., & Yopp, H. (2000). Sharing informational text with young children. *The Reading Teacher, 53*, 410-423.

Appendix

Alphabet Books, Storybooks, and Multimedia Materials Used in and Referred to in this Study

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- Bayer, J. (1992). *A, my name is Alice*. New York: Dial Books for Young Readers. Illustrated by Steven Kellogg.
- Bridwell, N. (1990). *Clifford's ABC*. New York: Scholastic.
- Dragonwagon, C. (1987). *Alligator arrived with apples: A potluck alphabet feast*. New York: Macmillan.
- Dr. Seuss. (1995). *Dr. Seuss's ABC*. New York: Random House/Brøderbund/Living Books.
- Dr. Seuss. (1988). *Dr. Seuss's ABC*. (Beginner library/audiocassette and book). New York: Random House.
- Eastman, P. D. (1974). *The alphabet book*. New York: Random House.
- Ehlert, L. (1989). *Eating the alphabet: Fruits & vegetables from A to Z*. New York: Harcourt Brace & Company.
- Geisel, T. S. (1963). *Dr. Seuss's ABC*. New York: Random House.
- Geisel, T. S. (1957). *The cat in the hat*. New York: Random House.
- Grover, M. (1997). *The accidental zucchini: An unexpected alphabet*. New York: Harcourt Brace & Company.
- Jahn-Clough, L. (1997). *ABC yummy*. New York: Houghton Mifflin.
- Kitamura, S. (1995). *From acorn to zoo and everything in between in alphabetical order*. New York: Farrar, Straus, and Giroux.
- Lobel, A. (1996). *Allison's zinnia*. New York: Mulberry Books.
- Martin, B., & Archambault, J. (1989). *Chicka chicka boom boom*. New York: Simon & Schuster.
- Slobodkina, E. (1991). *Caps for sale*. New York: HarperCollins.