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Using Word Boxes as a Large Group Phonics Approach in a First Grade Classroom

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ABSTRACT

The purpose this study was to explore the effectiveness of word boxes phonics instruction on beginning first-grade children's word identification and spelling performance. Forty-eight children were randomly selected to participate in either the word boxes instruction condition or a more traditional phonics condition. All children were administered a word identification and spelling pretest. At the completion of experimental conditions, children were administered word identification and spelling posttest and transfer measures. Children in the word boxes condition significantly outperformed children in a more traditional phonics condition on all posttest and transfer measures. Results indicated that word boxes lessons can be a viable phonics approach to teaching children to make connections between phonemic and orthographic features about words.

Introduction

D. B. Elkonin (1973) first introduced the use of sound boxes in his work with preschool children. Sound boxes are a drawn rectangle divided into three sections resembling three connected boxes. Counters or tokens are placed below each divided section of the rectangle. Children are instructed to move counters into the boxes as they hear each sound in a word. Initially, the instructor articulates a word slowly, and the children place a counter into the first box as they hear the first sound,

place a counter into the second box as they hear the second sound, and so on. Eventually, the children complete the entire task themselves by placing counters in the respective divided sections as they articulate a word slowly. Sound boxes used in this fashion are designed to teach children to segment sounds sequentially. Elkonin also incorporated positional analysis exercises using the boxes and counters. For instance, a word was slowly articulated, and the children were asked to place a counter in the box where they heard the middle sound and then where they heard the beginning sound and so on.

Word boxes are an extension of Elkonin's sound boxes and have been used as part of Reading Recovery lessons (Clay, 1993). There are three phases of the word boxes lessons. Similar to Elkonin's sound boxes activity, the first phase consists of a child simultaneously articulating a word while placing counters into respective divided sections of a rectangle. In the next phase, the counters are replaced with magnetic or tile letters, and a child is asked to move the letters into the boxes as he/she articulates a word slowly. The last phase consists of writing the letters in the respective divided sections of the rectangle as the word is being stated.

Word boxes and sound boxes have not received considerable empirical examination but have been used as part of comprehensive phonemic awareness training programs in experimentally controlled investigations (e.g., Ball & Blachman, 1991; Hohn & Ehri, 1983). Additionally, Joseph (1998-1999) demonstrated the effectiveness of using word boxes with a sample of six children with learning disabilities. Through the use of multiple baseline designs, she was able to show that second-grade and third-grade children with learning disabilities improved their performance on making letter-sound correspondences while reading and spelling words as a function of using the word boxes. While the effectiveness of word boxes instruction has been examined using one-to-one instruction, their effectiveness has not been investigated in a large classroom context and has not been compared to a more traditional phonics approach. Moreover, former studies did not examine children's abilities to make generalizations on identifying words that were similar but not directly taught during word boxes instructional conditions.

The purpose of the present study was to compare word identification and spelling performances between beginning first-grade children who received large group word boxes instruction and children who received a large group traditional phonics instruction. Furthermore, this study sought to determine if there were significant differences between the two instructional groups on word identification and spelling transfer tasks.

Research Questions

The following are research questions addressed in this study.

1. Will students who receive word boxes instruction outperform students who receive a more traditional phonics approach on word identification and spelling measures?
2. Will students who receive word boxes instruction outperform students who receive a more traditional phonics approach on transfer measures?

Methodology

Participants

Forty-eight first graders participated in this study (age range = 6.1 to 7.3, mean = 6.6) from two first grade classrooms. The students attended an elementary school in Southwest Ohio. There were a total of 21 males and 27 females. These children resided in low middle to middle class industrial suburban communities.

Experimenter

The experimenter is a certified general education teacher and a special education teacher of students with learning disabilities. Specifically, the experimenter taught first grade for approximately three years. She currently teaches first grade at the school where the study took place. She is responsible for teaching reading to two first grade classrooms while another first grade teacher is responsible for teaching math at the school. Both teachers are responsible for teaching social studies, science, and art to their homeroom first grade class.

Independent rater

The independent rater was an upper primary grade teacher who specialized in reading. She taught upper primary grade children who needed special help in reading at the same school. She was given all participants' ungraded copies of the spelling pretests, posttests, and transfer tests. She was given tape recorded copies of all participants' word identification pretests, posttests, and transfer tests. The following formula was used to calculate interater agreement on measures:

$$\frac{\text{Agreements} + \text{Disagreements}}{\text{Agreements}} \times 100 = \% \text{ agreement}$$

Instrumentation

Word identification and spelling pretests, posttests, and transfer tests were administered individually to all participants. Words were randomly selected from a pool of 200 consonant-vowel-consonant words (CVC) and were placed on word identification and spelling pretests, posttests, and transfer tests (see Appendix A for a list of these words).

Word identification Pretest and Posttests. Word identification measures consisted of a list of 30 words with CVC patterns. The words were typed in 18" font on a plain piece of white paper. The students were asked to read the list of words. They were given permission to skip any of the words that were unknown to them. No assistance on identifying words was provided by the instructor. All student responses were tape recorded.

Spelling Pretests and Posttests. Spelling pretests and posttests consisted of the same words as those presented on word identification tests. Each word was presented orally in isolation and then in a sentence, and then in isolation again. Students were asked to write the words on a numbered piece of plain white paper. This test was group administered.

Transfer Tests. Word identification and spelling transfer tests were similar to word identification and spelling tests except these tests consisted of CVC words that were different than the words directly taught to the students. Procedures for administering transfer tests were the same as those used with word identification and spelling pretests and posttests. Spelling and word identification transfer tests consisted of 30 words each.

Experimental Conditions

Word boxes and traditional phonics instruction were the two experimental conditions. The teacher/experimenter implemented these two approaches for 20 minutes a day over a four consecutive week period. The same words that were included on pretests and posttests were taught during the word boxes instruction and the traditional phonics conditions. In both conditions, the words with the middle /a/ vowel sound were taught first, then the middle /e/ vowel sound, then middle /i/, /o/ and /u/ vowel sounds. Some of the words previously taught in sessions were reviewed in subsequent sessions. There were approximately five words presented per session.

Word Boxes Instruction. Each student in the word boxes instruction condition received the following materials: 1) a drawn laminated word box that was divided into three sections; 2) laminated printed alphabets written on small square shaped plain paper; 3) small colored chips; 4) magic markers; 5) kleenex tissue. Materials were placed in ziploc bags on each student's desk just before word box instruction began.

At the start of the word boxes lesson, students were asked to take all of the contents out of the ziploc bags and place them on their desks. Each lesson consisted of a phonemic awareness, letter to sound matching, and spelling phase. The two former phases facilitated an understanding of orthographic as well as phonological features about words. The teacher demonstrated the task, shared the task, and allowed students to complete the task independently with feedback. In the phonemic awareness phase, the teacher would ask the students to find three chips and place them below each section of the divided box. As the

teacher slowly articulated a word, the students were asked to move the chips in the divided sections. The teacher then asked the children to slowly articulate the word while simultaneously moving the chips in the divided sections of the box. Chips were soon replaced with laminated letter squares and the students chorally articulated a word as they moved laminated letter squares into respective divided sections of the box. The last phase of the daily lesson consisted of children writing the letters with magic markers in respective divided sections of the box as they slowly articulated words.

Traditional Phonics Instruction. In the traditional phonics instruction condition, the teacher presented a list of words on the overhead, and the students were asked to chorally read the list of words. Words were written on the chalkboard by the teacher and letter-sound correspondences were taught by underlining each letter and naming the letter and saying its sound in sequential order. The teacher then lead the class in making choral responses during this demonstration. Afterwards, students were asked to complete worksheet exercises that contained the words presented on the overhead and on the chalkboard. The worksheet exercises involved drawing lines to connect two words that were alike and circling all the words on the page that were spelled with the same middle sound.

Procedures

Participants from two first grade classrooms were randomly selected to participate in either the word boxes instruction or the traditional phonics condition. There were 24 children in each group. The word boxes instruction group consisted of 11 males and 13 females (age range = 6-1 to 7-1, mean = 6-6), while 10 males and 14 females (age range = 6-1 to 7-3, mean = 6-7) comprised the traditional phonics group. The same teacher provided both types of instruction. While one group was receiving phonics instruction, the other children were receiving math instruction by the other first grade teacher in the school, and vice versa. All students received the same types of other reading instruction in addition to type of phonics instruction. Other types of reading instruction included individual, small group, and large group storybook reading.

All students were individually administered word identification and spelling pretests on two different days before the implementation of type of phonics instruction began. Spelling pretests were given first. At the completion of the four week experimental period, all children were administered word identification and spelling posttests. Once again, the spelling posttest was administered on one day, and students were given the word identification posttest the next day. Two days following the administration of the posttests, children completed transfer word identification and spelling tests. All tests were collected and later scored by the teacher and the independent rater. All measures were scored as the total number correct out of a total of 30 items. There was 100% agreement on the scoring of all measures between the independent rater and the teacher.

Results

The data were analyzed using basic descriptive statistic methods and multivariate analysis of covariance (MANCOVA) to control for initial differences on pretest measures. A multivariate procedure was used due to the interrelatedness of the dependent variables. Univariate procedures were also reported.

Table 1 presents mean and standard deviations of participants' performance on word identification and spelling pretests, posttests, and transfer tests. Type of instruction significantly separated the two groups (Wilks Lambda = .30, $F(1, 46) = 8.37, p < .001$). Two posttests and two transfer tests were subjected to analysis simultaneously, and the generalized proportion of variance among the groups which they explained was 45%. Univariate procedures revealed that all four measures significantly discriminated the groups: word identification posttest $F(1, 46) = 5.05, p < .05$; spelling posttest $F(1, 46) = 28.30, p < .001$; word identification transfer test $F(1, 46) = 21.32, p < .001$; spelling transfer test $F(1, 46) = 22.77, p < .001$.

Table 1

Performance on Word Identification and Spelling Measures By Group

Measures	Word Boxes		Traditional Phonics		Total*	
	M	SD	M	SD	M	SD
Word Id. Pretest	10.46	9.47	13.37	10.04	11.91	9.77
Spelling Pretest	10.29	7.93	12.33	10.54	11.31	9.29
Word Id. Posttest	27.00	4.69	20.66	9.73	23.83	8.21
Spelling Posttest	27.75	4.51	18.16	10.34	22.95	9.25
Word Id. Transfer	27.62	5.61	17.33	9.03	22.47	9.08
Spelling Transfer	17.79	5.61	17.79	10.28	22.73	9.59

Note: n = 48 total participants with 24 in each group.

Discussion

The results revealed that children who received word boxes instruction significantly outperformed children who received a more traditional phonics instruction approach on word identification and spelling posttest and transfer measures. Within both experimental conditions, children performed similarly on word identification and spelling measures indicating a reciprocal relationship between these two skills (Zutell, 1992). The word boxes instruction appeared to be a viable approach to teaching children phonics (i.e., letter-sound correspondences). Perhaps children in the word boxes condition performed significantly better because word boxes lessons incorporated explicit and interactive phonemic awareness, word identification and spelling instruction. As Stahl, Duffy-Hester, and Stahl (1998) indicated, good phonics instruction should include phonemic awareness, word identification, and an understanding of the orthographic features about words or spelling patterns of words. In other words, the way in which the word boxes lesson was presented in this study consisted of helping children bridge operating on words phonemically to operating on them orthographically. This process may have made it easier for children to identify and spell words presented on the transfer measures in contrast to

their peers who received the more traditional phonics approach. The students' ability to identify words that were not directly taught was consistent with previous studies. These studies revealed that children recognized words that shared similar spelling and sound patterns more readily as a whole once they grasped letter-sound by letter-sound analysis approach to pronouncing words (Bruck & Treiman, 1992; Leslie & Calhoun, 1995).

Although word boxes have been proven to be effective while teaching children in a one-to-one manner (Joseph), this study provided evidence that this approach can be successfully used in a large classroom context. As phonics instruction has been a mandated component of literacy instruction in some states (e.g., Ohio), educators will need to explore meaningful ways of incorporating important phonetic literacy processes. Since many educators view traditional ways of teaching phonics as boring (Stahl, Duffy-Hester, & Stahl), word boxes appear to be an inviting synthetic phonic approach for first-graders to grasp phonetic and orthographic features of language. Moreover, teachers who use the more traditional ways of teaching phonics (e.g., drill and skill worksheets) often do not have a clear understanding of the phonological processes that need to be developed and do not know how to facilitate internalization of component phonological processes (Pressley, 1998). In the word boxes condition, modeling and scaffolding helped the children become aware of word structures. Specifically, the divided boxes provided a scaffold or a supportive structure for helping children segment word parts sequentially and blend them together to make a whole. Thus, word boxes lessons provided children with one approach to studying about how words are formed.

While it is clear that one group outperformed the other, these findings cannot be generalized to all first-graders due to the relatively small sample size used in this study. Future studies need to replicate the procedures in order to establish more conclusive findings. Only phonogram (word family) words with CVC patterns were taught in the experimental conditions. It would be interesting to examine the effects of word boxes on student performance on other types word patterns. Future studies need to also investigate the effectiveness of word boxes on student performance on reading and writing words in connected text form.

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APPENDIX

List of Words Presented on Pretests and Posttests

big	top	bag
lip	fog	man
fin	pen	fat
win	hen	mat
pig	bed	sun
dog	vet	put
pot	pet	mud
hot	ham	cup
mop	cat	run
pop	fan	fun

List of Words Presented on Transfer Measures

Wig	hog	can
sip	fog	rat
sin	jet	sat
bin	den	rug
dig	red	mug
log	set	bug
rot	get	nut
dot	jam	hot
hop	bat	hut
cup	ran	hum