Facilitating Language Development for Inner-City Children: Experimental Evaluation of a Collaborative, Classroom-Based Intervention

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Abstract
Purpose: This study explores the effectiveness of a collaborative, classroom-based model in enhancing the development of vocabulary and phonological awareness skills for kindergarten and first-grade children in an inner-city school district.

Method: Four regular education teachers from the neighborhood school were randomly selected for participation. Children were randomly assigned to classrooms following usual school procedures. Two classrooms served as standard practice controls. In the other two classrooms, a collaborative service delivery model was implemented. One certified speech-language pathologist taught in each experimental classroom 2½ days per week. The speech-language pathologist and the regular education teachers engaged in joint curriculum planning on a weekly basis. Vocabulary and phonological awareness instruction was embedded into ongoing curricular activities. Additionally, explicit instruction in phonological awareness was planned for a 25-minute small-group activity center weekly.

Results: Following the 6-month intervention, superior gains were noted in receptive vocabulary, expressive vocabulary, beginning sound awareness, and letter-sound associations for children in the experimental classrooms as compared to children in the standard practice control classrooms. The children in the experimental classrooms also showed greater improvement on a deletion task in comparison to the children in the standard practice classrooms. Importantly, this task was never used as an instructional activity, and thus demonstrated generalization to a novel phonological awareness task.

Clinical Implications: The results are discussed with regard to the positive benefits of collaboration in facilitating the language abilities of inner-city children who are at risk for academic difficulties in the early elementary grades.

Key Words: language intervention, collaboration, language delay, limited English speaking

The first goal developed by the National Education Goals Panel is “By the year 2000, all children in America will start school ready to learn” (Copply, 1997). During the last decade, there has been much discussion about what is encompassed in this ambitious and optimistic goal, as well as what barriers may prevent our nation from achieving it. Among the primary
areas identified as contributing to children’s success in formal educational settings are health and physical development, emotional well-being and social competence, approaches to learning, communication skills, and cognition/general knowledge. Of these major areas, “deficiency in language” has been overwhelmingly reported by kindergarten teachers as the problem that most restricts children’s school readiness (Boyer, 1991).

The current study evolved out of local teacher concerns regarding the limited communication and language skills of students in their school district. Located near downtown Phoenix, Arizona, the school district was experiencing the impact of downtown redevelopment. Rapid changes in student demographics had occurred. Neighborhoods that had once been primarily Caucasian, middle-class families had given way to a multi-cultural mix of low- and moderate-income families (Osborn School District, 1997). Younger and larger families occupied the neighborhood homes, increasing the number of students enrolled in the district by 23.5% between the 1990–1991 and 1996–1997 academic years. Many of the children in the district lived in homes with incomes that were below or slightly above the federal poverty guidelines. That is, 83% of students in the district were eligible for the free or reduced school lunch program based on their family incomes. In addition, several refugee resettlement areas were located near the downtown, increasing the percentage of non-English-speaking families in the district. In 1996–1997, 23 languages other than English were spoken by students in the district, and 28% of the total student body was considered to have limited English proficiency (LEP).

Amid the complex issues related to children living in poverty, the kindergarten teachers did not believe that their students’ spoken language abilities were sufficiently well developed to serve as a foundation for formal academic learning. The teachers had good reason to be concerned given the well-documented relationship between children’s early language abilities and subsequent reading and academic achievement (e.g., Butler, Marsh, Sheppard, & Sheppard, 1985; Snow & Tabors, 1993). In particular, research has linked limited language skills to poor reading and academic outcomes among children from low-income homes (e.g., Walker, Greenwood, Hart, & Carta, 1994) and children with identified language impairments (e.g., Aram, Ekelman, & Nation, 1984; Stothard, Snowling, Bishop, Chipchase, & Kaplan, 1998). Additionally, children from minority backgrounds, especially those who have difficulty speaking English, often face considerable challenges learning to read and progressing through school (Donohue, Vøeø, Campbell, & Mazzeo, 1999; Federal Interagency Forum on Child and Family Statistics, 1998; Snow, Burns, & Griffin, 1998).

To address the district’s concerns, a language enhancement project was initiated to facilitate the language abilities of these young children who were at risk for academic difficulties. The school district had hired a full-time speech-language pathologist through Title VI funds for this purpose. The project was envisioned as a collaborative service delivery model involving regular classroom teachers and the speech-language pathologist (American Speech-Language-Hearing Association, 1991b). The collaborative model assumes that no one person or profession has sufficient expertise to execute all of the functions associated with providing educational services to students. Rather, each professional contributes a unique knowledge base and expertise to the process. For example, the classroom teachers bring a wealth of experience in curriculum development, developmentally appropriate activities, whole-group instruction, and classroom behavior management techniques. The speech-language pathologist contributes her knowledge of typical and atypical language development and an expertise in implementing naturalistic language facilitation techniques in special education classrooms. Thus, in collaborative models, professionals jointly determine student needs, develop goals, plan activities to achieve the goals, implement the activities, and evaluate the progress of the students (see also DiMeo, Merritt, & Culatta, 1998; Farber & Klein, 1999; Miller, 1989; Russell & Kaderavek, 1993). The district also wanted to evaluate the effectiveness of this effort systematically, but it had few resources available for program evaluation. Thus, the school district approached researchers from the local university for assistance. Over time, the project evolved into a research-to-practice partnership between the district and university researchers (see Wilcox, Hadley, & Bacon, 1998).

Two primary responsibilities were identified for the teachers and speech-language pathologist. First, more language learning opportunities were to be embedded within the meaningful activities of the classroom curriculum. As noted by Cummins (1984), academic success for minority students depends critically on their ability to manipulate cognitively demanding decontextualized language, but to attain this level of language proficiency, language use in context-embedded situations must first be well established. Second, the speech-language pathologist was to modify the English language input in the classrooms, making it more comprehensible for all children with limited English communication abilities, and to assist classroom teachers in modifying their own language input more effectively. Together, these two adjustments were intended to benefit the children with language delays from disadvantaged homes, the children with identified special educational needs, and the children learning English as a second language. This instructional approach was most consistent with a “sheltered instruction” approach to teaching children learning English as a second language.

August and Hakuta (1998) characterized sheltered instructional programs as those that conduct educational instruction in English, but modify the language input to make it comprehensible for nonnative English speakers. The focus on English language skills was not viewed as ideal from the perspective of the district. However, it was the most feasible option given the diversity of native languages within the district, the lack of personnel with proficiency in languages other than English, and the financial resources available to the district for program implementation.

A blueprint for building the language-focused curriculum of the current project was based on the curriculum approach of the Language Acquisition Preschool. (See Bunce,
This article reports on the effectiveness of a collaborative service delivery model, teaming a speech-language pathologist with regular educators to facilitate English language development for inner-city children with limited communication skills. A language-focused curriculum was jointly developed and implemented by regular kindergarten teachers and a speech-language pathologist (experimental condition) and compared to a standard practice model supplemented by an additional paraprofessional (control condition). The primary research questions were:

- Will children enrolled in English-language-enriched classrooms show greater gains in receptive and expressive vocabulary development than children in control classrooms?
- Will children enrolled in English-language-enriched classrooms show greater gains in phonological awareness and letter-sound associations than children in control classrooms?

**METHOD**

**Participants**

Participants were drawn from one central Phoenix elementary school. The elementary school had an enrollment of approximately 950 students in kindergarten through third grade. The majority (83%) of the students were from families that met federal income guidelines entitling the children to receive free or reduced school lunches. The distribution of ethnic backgrounds was as follows: 48% Hispanic American, 31% Caucasian, 10% Native American, 8% African American, and 3% Asian American. All children were assigned to classrooms following typical school procedures.

Four classrooms were selected randomly for the study from eight kindergarten teachers volunteering to participate. This reflected an 89% volunteer rate; only one teacher declined participation because of expressed concerns about the process of curriculum development. Two classrooms included kindergarten students only; two classrooms were multi-age kindergarten–first-grade (K–1) classrooms. One kindergarten classroom and one K–1 classroom were assigned to the experimental and control conditions. At the outset, there were 99 children distributed across four classrooms. The families of 13 children moved out of the district by the conclusion of the study. Attrition in the kindergarten control classroom was disproportionately higher (i.e., 6 of the 13 children) than for the other three classrooms.

Table 1 identifies the characteristics of the remaining 86 students distributed across the four classrooms. At the time of initial testing, the children ranged in age from 5:0 (years:months) to 6:9 (mean = 5:9). The sample consisted of 46 boys and 40 girls. Forty-six children were in the two experimental classrooms, and 40 children were in the two control classrooms. The majority of participants (76%) were kindergartners. The demographic characteristics of the participants reflected the demographics of the neighborhood.
in both ethnic and linguistic diversity. The participants’ ethnicities included Hispanic American (55.9%), Caucasian (27.9%), African American (3.3%), Native American (7.0%), and Asian American (5.9%). The participants’ native languages were primarily English (39.6%) and Spanish (46.5%), with the remaining 15% speaking one of the following languages: Bulgarian, German, Gujarati, Navajo, Russian, Serbo-Croatian, Turkish, and Vietnamese.

Of the 86 participants, 35 (41%) were identified as having LEP based on the Individual Proficiency Test (Dalton, 1991). Kindergartners and first graders identified as limited or non-English speakers scored at Levels II and III or below, respectively. For three classrooms, these children accounted for 40% to 50% of the students; in contrast, only 27% of the children in the control K–1 classroom were considered to have LEP. Identification of children with LEP was conducted by the English as a Second Language (ESL) specialist. Although an ESL specialist was available at the school, her primary responsibilities were to conduct language assessments and serve as a resource to the classroom teachers as needed. None of the child participants received any supplementary ESL instruction outside of the classroom.

There were also five children receiving special education services for speech-language impairments enrolled in the participating classrooms. Two children were enrolled in each of the experimental classrooms, whereas one child was enrolled in the control kindergarten classroom. The school speech-language specialist provided services to these children for the objectives on their individualized educational programs. Her direct services took the form of individual and small-group therapy sessions outside of the classroom. She also had periodic consultation with classroom teachers for carryover of therapy objectives within the classroom environment. However, the school speech-language specialist did not provide any direct services for children with speech-language impairments in the regular education classrooms. This specialist was not directly involved in the classroom-based language enhancement project.

### Classroom Curricula

All teachers in the current study followed curricular guidelines that were developed by the local school district. These guidelines were based on the Arizona state standards in language arts, mathematics, reading, science, and social studies. Although students are expected to achieve clearly delineated skill objectives, teachers have a reasonable amount of freedom in planning their instructional activities.

Given the large number of children with LEP in the district, most classroom teachers obtained an ESL endorsement for providing appropriate instruction to these children within their regular educational classrooms. To receive ESL endorsement, teachers were required to complete 27 hours of university coursework in teaching ESL. Thus, sheltered English instruction was the primary approach used throughout the district. All four teachers selected for participation in the current study had ESL endorsement, but none of the teachers was bilingual.

Participants in the study were enrolled in either a full-day kindergarten classroom or a multi-age K–1 classroom. The rationale for the K–1 classrooms was to allow children to work at their own pace through the kindergarten and first-grade curricula and to allow a teacher to stay with a group of children for a longer period of time. At the beginning of the school year, parents were able to choose placement in a full-day kindergarten classroom or a K–1 classroom. At the end of kindergarten, parents could opt to have their child placed in a regular first-grade classroom or remain in the K–1 class for first grade.

The classrooms followed similar schedules and included the same types of instructional activities (see Table 2). The
Table 2. Instructional schedule and integration of vocabulary and phonological awareness enhancement into the classroom curriculum.

<table>
<thead>
<tr>
<th>Time</th>
<th>Activity</th>
<th>Instructional activities</th>
<th>Integration of vocabulary instruction</th>
<th>Integration of phonological awareness instruction</th>
</tr>
</thead>
<tbody>
<tr>
<td>8:30–8:45</td>
<td>Opening</td>
<td>Teachers took attendance, facilitated calendar math, weather discussion, pledge, letter/sound and number reviews, and oral counting; the speech-language pathologist asked questions or made comments to enhance or expand on the teacher's primary instruction.</td>
<td>Teachers might incorporate target vocabulary into their directions during routine activities (e.g., hop to the weather chart; if it is sunny today, wiggle your fingers).</td>
<td>Opportunities for phonological awareness instruction were created by asking students to bring items from home beginning with target sounds or by engaging in sound play while taking attendance.</td>
</tr>
<tr>
<td>8:45–9:10 AND 11:30 –12:00</td>
<td>Music, story</td>
<td>The speech-language pathologist led these activities when present; teachers learned songs and gestures as well as how to incorporate drama and phonological awareness into stories; teachers led these activities on days when the speech-language pathologist was not present.</td>
<td>Instrumental songs were used in which students gav/ followed directions requiring target words (e.g., swing your arms beside your body); pre-reading discussion of target words; dramatization of target words in songs/stories.</td>
<td>Rhythm sticks and clapping were used to emphasize the rhythm of words/syllables in songs; song charts were used to increase awareness of written language (e.g., initially, different words were written in alternating colors; later, the beginning letters in words were made distinct). The speech-language pathologist provided explicit skill instruction in phonological awareness. Students might be engaged in a grab bag activity where they pulled out objects, named them, and sorted the objects into the correct pile based on their beginning sound (e.g., /g/ vs. /s/).</td>
</tr>
<tr>
<td>9:10–10:00</td>
<td>Small group activity centers</td>
<td>The teachers, speech-language pathologist, and an instructional assistant typically led 25-minute small group (n = 7) activities 1, 2, and 3, respectively (see Appendix). Students rotated through two activity centers each day.</td>
<td>As teachers and assistants led their small-group activities, they emphasized target words. For example, teachers emphasized target prepositions on an outdoor walk as they went across the field and around a tree.</td>
<td>Incidental opportunities for highlighting letter-sound correspondences would arise in dramatic play such as when pointing out written words on props like menus or signs.</td>
</tr>
<tr>
<td>10:00–10:25</td>
<td>Student choice activity centers</td>
<td>The speech-language pathologist modeled the use of indirect language facilitation techniques (e.g., modeling, recasting); teachers observed and gradually became comfortable using these techniques as well.</td>
<td>A dramatic play area was often facilitated by the speech-language pathologist. For example, during “bread” week, a bakery was set up and target words, such as long, short, slice, spread, between, and top, were emphasized.</td>
<td>Similar transition songs were used to target phonological awareness (e.g., “If your name begins with /p/, line up…”sung to the tune of “If You’re Happy and You Know It”).</td>
</tr>
<tr>
<td>10:25–10:30 AND 12:55 - 1:00</td>
<td>Transition to lunch/recess</td>
<td>The speech-language pathologist facilitated the use of songs and chants to structure transition times; teachers took over these responsibilities as the year progressed.</td>
<td>Directions for lining up often incorporated key vocabulary (e.g., “If you are a boy and you’re wearing long pants, go line up for lunch, go line up for lunch...sung to the tune of “Little Bunny Foo Foo”).</td>
<td>During whole-group activities, the teachers and the speech-language pathologist often modeled the use of using letter-sound associations to spell words with target sounds as part of whole-class graphing activities or summarization activities.</td>
</tr>
</tbody>
</table>

Note. Kindergartners were dismissed at 1:30 following afternoon recess; therefore, only first graders received the afternoon small-group instruction time, providing additional instruction on language arts (e.g., reading) and higher level math skills.
school day was 5 hours in length for kindergarten children
and 5 hours and 45 minutes for first-grade children.
Kindergarten children in the multi-age classrooms were
dismissed at the same time as children in the full-day
kindergarten classrooms. Thus, all kindergartners received
approximately 3 hours and 40 minutes of classroom
instruction; first-grade children received approximately 4
hours and 15 minutes.

The primary difference between the kindergartners and K–1
classrooms was the way in which whole-group activities
were facilitated. The K–1 teachers individualized their
questioning techniques to allow students to participate at
their own level, yet whole-group activities tended to be
conducted at a more advanced level than in the kindergar-
ten-only classrooms. Kindergartners in the K–1 classrooms
were sometimes encouraged to listen to and learn from the
first-grade students. Additionally, the K–1 classroom
teachers typically focused on more formal reading instruc-
tion and higher level math skills with first graders after the
kindergartners were dismissed.

Procedures

Pretest/post-test. Two standardized tests of vocabulary
abilities, three measures of phonological awareness, and a
letter-sound association task were administered at pretest
and post-test. All testing was conducted by two certified
speech-language pathologists. Pretesting began in mid-
September and post-testing began in mid-April, following
the 6-month intervention. Both testing periods required
approximately 1 month to complete.

The assessment battery was divided into two sessions. In
session one, the Peabody Picture Vocabulary Test-III
(PPVT-III, Dunn & Dunn, 1996) and the Expressive
Vocabulary Test (EVT, Williams, 1997) were administered
to obtain standardized measures of receptive and expressive
vocabulary abilities, respectively. Testing typically occurred
in isolated rooms on the school grounds. The PPVT-III was
administered first, followed by the EVT. Both tests were
administered to all children in English, regardless of
language background and proficiency.

Session two typically occurred within 2 days of the
vocabulary testing. During this session, the phonological
awareness and letter-sound association tasks were adminis-
tered to those children with some English abilities. Initially,
some children did not have the levels of English language
proficiency needed to understand the instructions or
respond to the tasks. Therefore, 12 kindergarten children
who did not obtain a basal score on one (or both) of the
vocabulary tests were not subjected to further testing. A
score of 0 was entered for all session two measures in
order to retain these children in the data analysis. Import-
tantly, during post-testing, all 86 children attained basal
scores on both vocabulary tests and completed the phono-
logical awareness testing.

Three phonological awareness measures were obtained at
each grade level. Tasks used with the kindergartners
included rhyme awareness and beginning sound awareness
from the Phonological Awareness and Literacy Screening
(PALS, Swank, Invernizzi, & Juel, 1997) and syllable
deletion (Swank, 1995). Tasks used with the first graders
included the beginning sound awareness and syllable
deletion measures as well as a measure of phoneme
deletion (Swank, 1995). In addition, knowledge of letter-
sound associations (i.e., letter b says /b/) was examined for
both grades (Swank, 1995). Different measures were used
across the two grades because different tasks at different
ages have been shown to relate to success in later reading

For the PALS awareness tasks, children had to match
words that rhymed or began with the same sound from a
set of four pictures. These tasks were modified from the
original instructions in three ways. First, the tasks were
administered individually instead of in groups. Second,
children did not receive any systematic classroom instruc-
tion on these skills prior to pretesting given the experimen-
tal nature of the study. And finally, items in the PALS
response booklet were presented as individual picture cards
for hands-on manipulation because prior experience with
paper and pencil activities could not be assumed for many
of the children. These modifications were viewed as
necessary to facilitate optimal child performance. The
deletion tasks required children to manipulate the sound
structure of words (e.g., say monkey without mon; say sit
without s).

Treatment program. The collaborative model consisted of
three primary components: (a) professional education,
(b) joint curriculum planning, and (c) the use of naturalistic
language facilitation techniques to implement the language-
enhanced curriculum. Professional education was not a
distinct component but was woven into the conversational
exchanges that transpired during curriculum planning and
implementation. The professionals had a wealth of personal
experience to draw on, yet at the same time, they were
embarking on an unfamiliar collaborative venture. The
kindergarten teachers both had more than 20 years of
teaching experience. However, they had never formally
collaborated with a speech-language pathologist.

The speech-language pathologist had worked in the
public schools for more than 17 years and had previous
experience in curriculum development and consultation. She
had previously worked on the Navajo reservation, helping
to establish a K–3 bilingual speech and language program,
and was instrumental in revamping the ESL curriculum for
the primary grades. However, she had never had major
instructional responsibilities within regular education
classrooms. Throughout the intervention, the classroom
teachers had primary responsibility for planning activities
to meet the children’s curricular goals and the speech-
language pathologist had primary responsibility for using
the curriculum to meet the students’ communication goals.
However, as the teachers and the speech-language patholo-
gist educated each other, worked together, and supported
one another, they became more comfortable performing
functions that were usually reserved for the other disci-
pline. In other words, toward the end of the year, their
functioning began to resemble a transdisciplinary team
(Woodruff & McGonigel, 1988).

The two teachers in the experimental condition and the
speech-language pathologist engaged in joint curriculum
planning on a weekly basis (Bunce, 1995a). Planning meetings typically lasted 1 hour. In addition, the university researcher (also a certified speech-language pathologist) attended the planning meetings on a biweekly basis during the fall semester (first 10 weeks of the intervention) and on two occasions during the spring semester. The primary role of the university researcher was to facilitate the collaborative process of infusing a language focus into the existing curriculum and to foster joint problem solving when needed. Initially, the university researcher also provided some general resources for curriculum enhancement (i.e., Adams, Foorman, Lundberg, & Beeler, 1998; Bunce, 1995a; Rice & Wilcox, 1995; Tabors, 1997) and assisted the professionals with strategies for joint curriculum planning.

At the initial meetings, considerable information was exchanged as the joint curriculum began to take shape. For example, the kindergarten teachers shared their rationale for the structure of their classroom schedules, the way in which their individual approaches to instruction had developed over the years, and their instructional goals for the year. The speech-language pathologist and university researcher shared information regarding the use of music/rhythm and dramatic play activities to enhance language development, the beneficial aspects of naturalistic language facilitation techniques, and the relationship between phonological awareness and initial reading and spelling skills. Written summaries of this information were also available within the curriculum resources provided.

During an initial planning meeting, it was decided that the teachers and the speech-language pathologist would identify 20 target vocabulary words to embed within each week’s thematic unit (see Appendix). To build the children’s vocabularies beyond names for things, target vocabulary for each week included verbs, adjectives, and prepositions, as well as nouns. The rationale for emphasizing a diversity of word classes was as follows: (a) Verbs were emphasized because of their centrality to grammatical development (see Rice, 1991), (b) prepositions (e.g., in, on, over, through) were emphasized because of their overlap with “basic concepts” and their importance to the language of instruction (Boehm, 1986), and (c) adjectives were targeted primarily to increase children’s lexical diversity.

Target words were selected after the week’s curriculum was completed, based on key concepts in the stories and songs. Words at different levels of complexity were also selected to address the differing ability levels represented. Thus, the choices for letter of the week were in large part dictated by the order in which these programs introduced letters based on similarities in the way letters are produced. The K–1 teacher introduced letters and their sounds following the general approach of Spalding (1990). Thus, the choices for letter of the week were in large part dictated by the order in which these programs introduced letters during the first part of the year.

Second, the speech-language pathologist led a 25-minute phonological awareness activity weekly in one small-group center. All children rotated through this center once during each week. Activities were based on the suggestions of Adams and her colleagues (Adams et al., 1998), but the program was not followed in a strict sense. Activities focused on identifying and generating rhyming words, categorizing words by their beginning sounds, blending syllables and sounds together to form words, and segmenting words into syllables and sounds. Categorization activities often focused on words that included the letters of the week. The emphasis during the first 10 weeks (mid-October–December) was on rhyme awareness, beginning sound awareness, and syllable blending and segmentation. During the last 13 weeks of the intervention (January to mid-April), activities often focused on phoneme blending and segmentation, which incorporated opportunities for practice on letter-sound associations as well. Explicit instruction was provided on these skills, in addition to contextually embedded instruction, because of their importance to initial reading and spelling. The synthetic skill of blending is used to decode unknown words as part
of the initial reading process. The analytic skill of segmentation is called on when spelling new, less familiar words. Further, the explicit instruction was assumed to make these basic skills more automatic for the children, thereby freeing more cognitive resources for higher order skills in the future (e.g., comprehension, writing). In general, the teachers left this aspect of curricular planning and implementation to the speech-language pathologist.

Finally, strategies designed to heighten children’s phonological awareness were also incorporated into a variety of classroom routines and incidental teaching opportunities (Murphy, 1997; Watkins & Bunce, 1996). For example, during opening circle time, one teacher used “sound tubs” for sorting objects brought from home that began with the target sounds of the week. During the opening circle time, students put objects like a stuffed monkey, a magnet, and a marble in the /m/ tub. The other teacher and her students enjoyed sound play games during roll call, such as rhyming each student’s name with the week’s target sound (e.g., Jeffrey-Meffrey). Songs with adapted lyrics were also used during transition times to provide directions to students for choosing free choice centers or lining up for lunch or recess (i.e., “If your name begins with /t/ stand up” to the tune of “If You’re Happy and You Know It”). Although the speech-language pathologist led transition songs at the beginning of the year, as the semester progressed, the teachers gained confidence leading these songs. They also began providing more incidental opportunities for practicing rhyming, identifying beginning sounds, segmenting, and blending in other curricular activities throughout the day.

The speech-language pathologist taught with the teachers from mid-October, after all pretesting was completed, through mid-April, when post-testing began. The speech-language pathologist was in each experimental classroom 2½ days per week—Mondays and Tuesdays and Friday mornings in one classroom, Wednesdays and Thursdays and Friday afternoons in the other classroom. Together, the teachers and the speech-language pathologist shared responsibilities for direct instruction in vocabulary and letter-sound association throughout the curricular activities. The teachers had primary responsibility for providing the weekly thematic units and the whole-class and small-group activities for achieving their language arts, math, and science curricular goals. They also introduced target vocabulary using story books and incorporated this vocabulary in their instructional lessons as well. The speech-language pathologist’s responsibilities included modeling naturalistic language facilitation techniques during instructional activities and free-play activities with the children. The speech-language pathologist often led the morning story and whole-group music activities intended to emphasize target vocabulary as well as some small- and whole-group activities (e.g., making salad, dramatizing stories, etc.). In addition, she had primary responsibility for planning the small group activities focusing on phonological awareness and implementing this instruction. The teachers coached the speech-language pathologist on curriculum development as well as classroom management and behavior management strategies, particularly when conducting whole-class instruction or transitioning between activities (Gersten, Morvant, & Brengelman, 1995). The speech-language pathologist coached the teachers on their use of naturalistic language facilitation techniques and ways to contextualize their instructional language or make it more concrete for the children. Typically, informal discussions took place at the end of the teaching day; however, the professionals occasionally stepped in during classroom lessons to demonstrate the use of particular techniques for one another.

The kindergarten teachers in the standard practice control condition followed their existing curricular plans. An extra paraprofessional was assigned to each control classroom for 2½ days per week to maintain the same adult-to-student ratio as in the experimental condition. Control teachers were free to use the paraprofessional in any way they desired (e.g., small group, tutoring, etc.). In general, the control teachers used a whole language approach for integrating language and literacy objectives into their classrooms. In a manner not unlike the experimental teachers, they emphasized the sounds, vocabulary, and syntactic structures that were relevant to the stories chosen for their thematic units. However, the primary differences between the two classroom conditions were the extent to which (a) the adults shared and supported each others’ roles, (b) all adults in the classrooms were explicitly aware of target sounds and vocabulary, and (c) the children received explicit skills instruction in phonological awareness.

RESULTS

The results are presented in three sections: (a) pretest comparisons for the experimental and standard practice classrooms, (b) comparisons of improvement in vocabulary, and (c) comparisons of improvement in phonological awareness. All scores for the vocabulary measures are reported as standard scores; all scores on the non-standardized phonological awareness tasks are reported as raw scores. Although letter-sound association was not viewed as a measure of phonological awareness, it was grouped with these measures for purposes of convenience.

All pretest comparisons were made using two-tailed independent sample t tests. To assess the effectiveness of the collaborative service delivery model in increasing student performance, analyses of covariance (ANCOVA) were used. Differences between the mean post-test scores of students in the control classrooms and the experimental classrooms were examined. In addition to classroom condition, language background (native English vs. nonnative English) was included as a between-subject factor. This factor revealed whether differences between the classroom conditions were systematically related to children with native or nonnative English language backgrounds. Pretest scores and grade were used as covariates for measures administered to both kindergartners and first graders. The covariates adjusted the post-test scores to account for the variation in the children’s pretest scores. Only pretest
scores were used as a covariate for the analyses regarding rhyme and phoneme deletion because these measures were administered to only kindergartners and first graders, respectively.

**Pretest Comparisons**

The pretest scores for the experimental and control groups are presented in Table 3. No significant difference was found between the experimental and control group for children's chronological age at pretest, nor were any significant differences found for any of the dependent measures at pretest: PPVT-III, EVT, rhyme, beginning sound awareness, letter-sound association, syllable deletion, or phoneme deletion.

**Vocabulary Gains**

Improvement in children’s comprehension and expressive use of words was examined by comparing the vocabulary post-test scores for the experimental and control groups. The standard scores obtained from the PPVT-III and EVT are reported in Table 3. There was a significant main effect for classroom condition for both the PPVT-III, $F(1, 85) = 11.06, p = .001$, and the EVT, $F(1, 85) = 11.63, p = .001$. Students in the experimental classrooms scored significantly higher than the students in the control classrooms after adjusting for pretest scores and grade. Another way to characterize this difference was to examine the estimated marginal means generated for each condition when the covariates were set to their mean values. In this case, the estimated marginal means indicated that the experimental group scored 7.36 and 8.17 standard score points higher than the control group on the PPVT-III and EVT, respectively. There were no differences between the nonnative English speakers and the native English speakers, PPVT-III $F(1, 85) = 2.59, p = .11$; EVT, $F(1, 85) = 2.77, p = .10$, nor were there any interactions between classroom condition and language background, PPVT-III $F(1, 85) = .10, p = .75$; EVT, $F(1, 85) = .02, p = .89$.

As can be seen in Table 4, both the native and nonnative speakers in the experimental classrooms demonstrated vocabulary gains. The pre- and post-test means for the subset of nonnative children with LEP ($n = 35$) as well as for the five children receiving speech-language services are also provided in Table 4. Although these subsets were not analyzed statistically, visual inspection of the means suggests that children with varying levels of language ability benefited from the language enhancement program in the experimental classrooms.

**Phonological Awareness Gains**

The measures of rhyme, beginning sound awareness, and letter-sound association evaluated aspects of sound awareness that were explicitly targeted in the experimental

---

**Table 3. Means (and standard deviations) for dependent measures.**

<table>
<thead>
<tr>
<th>Variable</th>
<th>Classroom Condition</th>
<th>Test time</th>
<th></th>
<th></th>
<th></th>
<th>F-value</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Pretest</td>
<td>Post-test</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Vocabulary measures</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PPVT-III</td>
<td>E</td>
<td>74.11 (22.15)</td>
<td>86.98 (17.15)</td>
<td></td>
<td></td>
<td>11.06***</td>
</tr>
<tr>
<td></td>
<td>C</td>
<td>80.23 (24.70)</td>
<td>83.68 (18.44)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>EVT</td>
<td>E</td>
<td>76.67 (23.09)</td>
<td>91.70 (18.81)</td>
<td></td>
<td></td>
<td>11.63***</td>
</tr>
<tr>
<td></td>
<td>C</td>
<td>79.50 (22.40)</td>
<td>85.75 (19.94)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Phonological awareness: Targeted</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rhyme</td>
<td>E</td>
<td>5.06 (3.56)</td>
<td>7.74 (2.76)</td>
<td></td>
<td></td>
<td>0.32</td>
</tr>
<tr>
<td></td>
<td>C</td>
<td>5.66 (3.76)</td>
<td>7.79 (2.53)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Beginning sound awareness</td>
<td>E</td>
<td>5.85 (3.43)</td>
<td>9.00 (1.80)</td>
<td></td>
<td></td>
<td>4.23*</td>
</tr>
<tr>
<td></td>
<td>C</td>
<td>5.83 (3.62)</td>
<td>8.20 (1.83)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Letter-sound association</td>
<td>E</td>
<td>2.30 (3.22)</td>
<td>7.74 (3.49)</td>
<td></td>
<td></td>
<td>13.48***</td>
</tr>
<tr>
<td></td>
<td>C</td>
<td>2.35 (3.36)</td>
<td>5.15 (4.19)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Phonological awareness: Not targeted</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Syllable deletion</td>
<td>E</td>
<td>1.70 (2.70)</td>
<td>5.41 (3.72)</td>
<td></td>
<td></td>
<td>9.53**</td>
</tr>
<tr>
<td></td>
<td>C</td>
<td>2.73 (3.47)</td>
<td>4.10 (3.93)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Phoneme deletion</td>
<td>E</td>
<td>2.27 (2.87)</td>
<td>6.18 (2.86)</td>
<td></td>
<td></td>
<td>4.21†</td>
</tr>
<tr>
<td></td>
<td>C</td>
<td>3.18 (2.40)</td>
<td>3.91 (2.70)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Note. E = experimental, C = control, PPVT-III = Peabody Picture Vocabulary Test-III (Dunn & Dunn, 1996), EVT = Expressive Vocabulary Test (Williams, 1997).

* Standard scores reported; † Raw scores reported.

* $p \leq .05$, ** $p \leq .01$, *** $p \leq .001$

† $p = .056$
### Table 4. Pretest and post-test means by classroom condition and language level.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Classroom Condition</th>
<th>Native English Speakers</th>
<th>Nonnative English Speakers</th>
<th>Children with limited English proficiency</th>
<th>Children receiving speech-language services</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Pretest</td>
<td>Post-test</td>
<td>Pretest</td>
<td>Post-test</td>
</tr>
<tr>
<td>PPVT-III</td>
<td>E</td>
<td>93.81</td>
<td>102.00</td>
<td>63.60</td>
<td>78.97</td>
</tr>
<tr>
<td></td>
<td>C</td>
<td>100.61</td>
<td>97.39</td>
<td>63.55</td>
<td>72.45</td>
</tr>
<tr>
<td>EVT</td>
<td>E</td>
<td>92.69</td>
<td>105.19</td>
<td>68.13</td>
<td>84.50</td>
</tr>
<tr>
<td></td>
<td>C</td>
<td>95.50</td>
<td>98.89</td>
<td>66.41</td>
<td>75.00</td>
</tr>
<tr>
<td>Beginning sounds a</td>
<td>E</td>
<td>7.00</td>
<td>9.25</td>
<td>5.23</td>
<td>8.87</td>
</tr>
<tr>
<td></td>
<td>C</td>
<td>7.72</td>
<td>8.78</td>
<td>4.27</td>
<td>7.73</td>
</tr>
<tr>
<td>Letter-sound association b</td>
<td>E</td>
<td>2.56</td>
<td>8.19</td>
<td>2.17</td>
<td>7.50</td>
</tr>
<tr>
<td></td>
<td>C</td>
<td>4.28</td>
<td>6.78</td>
<td>0.77</td>
<td>3.82</td>
</tr>
<tr>
<td>Syllable deletion a</td>
<td>E</td>
<td>2.38</td>
<td>6.19</td>
<td>1.33</td>
<td>5.00</td>
</tr>
<tr>
<td></td>
<td>C</td>
<td>4.89</td>
<td>6.39</td>
<td>0.95</td>
<td>2.23</td>
</tr>
<tr>
<td>Phoneme deletion b</td>
<td>E</td>
<td>1.00</td>
<td>4.33</td>
<td>2.75</td>
<td>6.88</td>
</tr>
<tr>
<td></td>
<td>C</td>
<td>4.43</td>
<td>5.43</td>
<td>1.00</td>
<td>1.25</td>
</tr>
</tbody>
</table>

*Note. E = experimental, C = control, na = not applicable, PPVT-III = Peabody Picture Vocabularly Test -III (Dunn & Dunn, 1996), EVT = Expressive Vocabulary Test (Williams, 1997).  
a  Standard scores reported;  b  Raw scores reported.*

classroom condition. In contrast, the children’s ability to “delete” sounds or syllables from words was never targeted in the intervention. Thus, the deletion of syllables and phonemes from words measured generalization to a novel task, a more stringent test of the intervention effects.

As shown in Table 3, mixed findings were obtained across this set of measures. No difference was apparent between the two classroom conditions on the measure of rhyme, $F(1, 63) = .32, p = .58$. However, significant differences were noted for the measures of beginning sound awareness and letter-sound association, $F(1, 85) = 4.23, p = .04$ and $F(1, 85) = 13.48, p = .000$, respectively. The estimated marginal means for beginning sound awareness and letter-sound association indicated that the experimental group scored .79 and 2.69 points higher than the control group, respectively, after adjusting for Grade and pretest scores. For the three tasks explicitly targeted in the intervention, there were no differences between the nonnative speakers and the native English speakers (all $F < 1.23$, all $p > .27$), nor were there any interactions between classroom condition and language background (all $F < 0.13$, all $p > .72$). On the deletion tasks, which measured generalization to a novel task, the main effect for classroom condition was significant for syllable deletion ($F(1, 85) = 9.53, p = .003$), but of marginal significance for phoneme deletion, $F(1, 21) = 4.21, p = .056$. On the syllable deletion task, the estimated marginal means for the experimental group were 2.05 points higher than for the control group. Although differences were not apparent on either measure for language background (all $F(1, 21) < .51$, all $p > .48$), a significant interaction effect was found for phoneme deletion, $F(1, 21) = 6.94, p = .017$. Interpretation of this result is complicated by the small sample and the unequal number of children per cell for this analysis. That is, only first graders completed the phoneme deletion task, and there was a disproportionate number of nonnative English speakers in the experimental condition as compared to the control condition (73% vs 36%; see Table 1).

Table 4 displays the pre- and post-test means for beginning sound awareness, letter-sound association, syllable deletion, and phoneme deletion, respectively. As with the vocabulary measures, both the native and nonnative speakers demonstrated gains in the experimental classrooms. The overall experimental effect was not artificially created by a single group of students. Rather, students with a diverse range of language competencies appeared to benefit from the English language enhancement in the experimental classrooms. Finally, to ensure that the experimental effects on the phonological awareness tasks were not confounded by ceiling effects, children performing at or near mastery levels on these measures at the beginning of the study were excluded (i.e., pretest scores of 9 or 10 out of 10) and the analyses were repeated. The number of children at or near mastery levels on each measure was nearly equivalent across the two classroom conditions. Importantly, there were no differences in the pattern of results obtained following this adjustment.

**DISCUSSION**

This study explored the effectiveness of a collaborative model for enhancing the language abilities of kindergarten students...
and first-grade children in an inner-city school district. The results indicate that classroom-based collaboration between regular education teachers and a certified speech-language pathologist holds promise as a highly effective means of facilitating development of both vocabulary and phonological awareness skills. Of particular importance was the finding that this model benefitted children who spoke English as a native language as well as children from nonnative English language backgrounds. Each of these findings is addressed, followed by a general discussion of the positive benefits of establishing and maintaining collaborative partnerships.

**Enhanced Language Abilities**

The receptive and expressive vocabulary abilities of the inner-city children in both classroom conditions improved relative to normative expectations during the course of the study. Whereas standard scores placed the groups’ performance below average at pretest, the groups’ post-test scores were generally within one standard deviation of the mean. The gains observed in both classroom conditions are all the more impressive when considering that children must accelerate their rates of vocabulary learning beyond typical developmental rates in order to demonstrate standard score gains (see Rice & Hadley, 1995, for discussion). At the same time, the children in the experimental classrooms demonstrated greater gains relative to children in the standard practice control classrooms. Specifically, children in the standard practice control classrooms demonstrated average adjusted gains of approximately 5 and 7 standard score points for the receptive and expressive vocabulary measures, respectively. In contrast, children in the experimental classrooms demonstrated average adjusted gains of approximately 12 and 15 standard score points. The absence of interaction effects indicated that the gains in vocabulary noted were not systematically affected by the children’s language background.

The benefits of the phonological awareness activities embedded in the existing classroom curricula were mixed. Equivalent gains were noted between the children in the experimental and control classrooms on the measure of rhyme. This suggests that rhyming activities were plentiful in the standard practice classrooms as well. In contrast, differences between the classroom conditions were observed on the measures of beginning sound awareness and letter-sound association that were specifically targeted in classroom activities. These skills were targeted in both the small-group phonological awareness activities, and specific letter-sound pairs were targeted weekly. Moreover, a primary principle guiding instruction in the experimental condition was for teachers to make the associations between the sounds of speech and the signs of speech explicit to the children. Thus, as the speech-language pathologist modeled and coached the teachers on the use of techniques to do this (e.g., What letter makes my mouth say /m/?), the teachers reported that they were more comfortable embedding these techniques into whole-class and small-group activities (see Table 2 for more examples of how phonological awareness instruction was integrated across classroom activities). The teachers also reported their use of these techniques during independent journal writing time, an activity that teachers used with increasing frequency over the spring semester.

As with the vocabulary findings, both students from nonnative language backgrounds, as well as native English speakers, benefitted from the phonological awareness instruction. This finding was of considerable importance given the uncertainty at the outset of this study about whether this training would benefit children with LEP. At the initial planning meetings, the professionals discussed whether or not explicit phonological awareness instruction should be provided only to those children with functional English abilities. This would have required grouping children by their ability levels for the small-group activity centers. Because none of the professionals favored this option, it was decided to include all students in the explicit English phonological awareness training.

In addition, the phonological awareness training appeared to have generalized beyond the skills specifically taught. The group differences found for the deletion tasks indicated that phonological awareness training had indeed heightened children’s sensitivity to the syllable and sound structure of words. Children in the experimental classrooms did not receive any direct instruction on this specific skill, yet the associated training on phoneme identification, categorization, and segmentation allowed children in the experimental classrooms to complete a novel phonological awareness task more successfully than children in the control classrooms. The ultimate importance of this finding for the children in this study is yet to be determined. Of primary interest is the extent to which the experimental group’s heightened phonological awareness translates into subsequent advantages in early reading skills and academic achievement. Swank and Catts (1994) found that deletion skills were the best predictor of children’s subsequent ability to decode written words at the end of first grade. Thus, the longer term benefits of the intervention in this regard will be evaluated as the children in this study make their way through the early elementary grades.

This study provides additional support for implementing a language-focused curriculum in a collaborative fashion in early childhood settings. This curricular approach includes the facilitation of explicit skills as well as the incorporation of those skills into meaningful communicative and literate activities across the entire curriculum. Rice and Hadley (1995) and Bunce (1995b) reported on the effectiveness of this approach for native speakers of English with and without language impairments and for children learning English as a second language in a preschool setting. The current study demonstrates that this approach is also effective with older children from disadvantaged homes, many of whom are learning English as a second language, whose general language abilities are “below average.” It may not be particularly surprising that the approach benefitted both native and nonnative speakers of English given that the strategies recommended to facilitate first language acquisition for children with language delays and disorders are the same techniques identified as beneficial for promoting second language acquisition (Burns, Griffin,
Collaborative Partnerships

From a research perspective, this study adds to the growing literature on the successful implementation of collaborative service delivery models in school-based settings as well as the use of research-practice partnerships in supporting this process (Christensen & Luckett, 1990; Ellis, Schlaudecker, & Regimbal, 1995; Farber, Denenberg, Klyman, & Lachman, 1992; Farber & Klein, 1999; Ferguson, 1992). For example, Ellis et al. (1995) recently reported on the success of an 8-week collaborative consultation effort between a kindergarten teacher, a physical education teacher, a speech-language pathologist, and a university researcher that was designed to facilitate kindergarten children’s knowledge of basic concepts in comparison to children in a standard practice control classroom. Similarly, Farber and Klein (1999) recently described a comprehensive collaborative intervention program for classroom teachers and speech-language pathologists that was developed by university researchers that boosted the listening comprehension of kindergarten and first-grade students relative to children who were not enrolled in the program. This emerging database indicates that collaborative programs between regular educators and speech-language pathologists can indeed facilitate language abilities in academic settings.

Despite the general benefits of collaborative partnerships, many specific clinical practice questions have yet to be addressed. Further practice-based research is needed to address fundamental practitioner concerns, such as the intensity and duration of intervention or the most optimal time to initiate services (Wilcox et al., 1998). For example, how intense must co-teaching efforts be in order to obtain educationally significant and lasting gains? The children in the current study demonstrated dramatic improvement across several target areas, yet they also benefitted from an intensive co-teaching model. The speech-language pathologist was in each experimental classroom for approximately 9–10 hours per week for 23 weeks. This program was considerably more intense than the program that was implemented by Ellis and colleagues (Ellis et al., 1995), which consisted of 1 hour of coordinated instruction for an 8-week period, or the comprehensive program of Farber and Klein (1999), which was implemented for 2½ hours per week throughout the academic year. Ongoing participation-research partnerships offer one means of evaluating the effects of the timing, intensity, and duration of intervention services.

From a clinical practice perspective, teachers and speech-language pathologists may wonder how collaborative programs can be established and maintained amid the time constraints faced by most educators. In fact, in a recent survey of 54 teachers and 21 speech-language pathologists, both groups of educators noted problems in finding the time needed for consultation (Beck & Dennis, 1997). Yet, both groups believed that team teaching was the most appropriate model of classroom-based intervention. In other words, team teaching is viewed most positively, but it requires joint planning time to implement successfully. Because joint planning time is not often available, team teaching may not often be used. To break this vicious cycle, garnering administrative support for adequate and appropriate planning time is a critical first step to implementing these types of services (American Speech-Language-Hearing Association, 1991b).

Certainly, the use of a full-time speech-language pathologist to serve two classrooms as in the current study is a luxury that many school districts cannot afford. Moreover, if the speech-language pathologist had her own caseload, she could not have dedicated so much time to these two classrooms. However, it was never the intention of the participating district to maintain this level of speech-language pathologist support over time. Rather, the district hoped to develop an effective classroom-based collaborative model that could be scaled back in its intensity once the approach was in place and validated.

Specifically, during the second academic year of the project, the speech-language pathologist has been teaching with one kindergarten teacher from the initial project year and three new kindergarten teachers (two teachers share the responsibilities for one classroom). She teaches in each of the three classrooms 1 day per week. One joint planning session is held weekly for all four teachers and the speech-language pathologist. This minimizes planning time for the speech-language pathologist and has allowed the teachers to benefit from their interactions with one another. In addition, the enthusiasm of the veteran teacher has shaped the attitudes of the new teachers. After having observed the positive effects of the intervention in her classroom during the previous year, she is solidly invested in the program. During the weekly planning sessions, she recounts methods and activities that were particularly meaningful to her during the first year of the project. She also began asking the speech-language pathologist to explain and demonstrate the weekly phonological awareness activities in detail so that she (and the new teachers) could continue the activity in subsequent weeks. This dynamic was not apparent in the planning meetings during the first project year. Thus, as teachers become more comfortable with enhancement activities and language facilitation techniques, and as more teachers acquire “veteran” status, it may be possible to reduce the amount of time the speech-language pathologist spends in each classroom even further. However, the intensive speech-
language pathologist support at the outset of this project seemed to be key to gaining initial teacher support.

Another administrative concern may focus on how to provide financial support for such a program. Although the current project was supported initially by external funding, it has been possible to maintain the program by using Title I funding into 1999–2000 and beyond. Because the current district is eligible for “school-wide project status” based on their federal poverty data (i.e., more than 50% of students are eligible for free/reduced lunch), all students in the school are eligible for Title I services. Given the linkages between language abilities and academic achievement, speech-language pathologists can be hired to facilitate the language abilities of students and to work with classroom teachers under the mandates to raise student achievement and to provide staff development. Thus, in this funding scenario, a speech-language pathologist’s responsibility is not to provide services to children with identified disabilities, but rather to enhance the language abilities of children who are at risk for academic failure.

Finally, systematic evaluations of collaborative models that promote English language and literacy development through children’s native languages are needed. For example, Durgunoglu, Nagy, and Hancin-Bhatt (1993) documented the cross-language transfer of phonological awareness abilities in Spanish-speaking first graders to the spelling of unfamiliar English words. Ideally, collaborating teachers and speech-language pathologists would have some proficiency in the native language of the majority of non-English speakers and ESL or bilingual educators would be part of the collaborative team. When bilingual professionals are not available, the use of bilingual support personnel could be explored. For example, the feasibility and effectiveness of training bilingual support personnel to enhance the vocabulary and phonological awareness skills of children in their native languages should be explored, particularly as these skills relate to subsequent English language and literacy acquisition. Although these questions were beyond the scope of the current study, systematic program evaluation of these additional variables is warranted.

CONCLUSIONS

Although most speech-language pathologists working in school-based settings provide services to children with identified communication disabilities, speech-language pathologists also have a wealth of information to share with regular educators. This information can enhance the communication abilities of all children in regular education classrooms. In fact, interprofessional collaboration is an expected role and responsibility of practicing speech-language pathologists (American Speech-Language-Hearing Association, 1991a). In collaborative teaching opportunities, speech-language pathologists and teachers can identify ways in which language can be infused across the curriculum and they can work together to use naturalistic language facilitation techniques. In school districts with high percentages of children from disadvantaged homes and children with LEP, it may be particularly important for administrators to tap into this unique expertise. Through successful collaborative efforts aimed at fostering children’s communication and language skills in early childhood, speech-language pathologists can play a vital role in getting America’s children ready to learn.

ACKNOWLEDGMENTS

This study was supported primarily by a grant from Title VI B 98FESCDBG 07-04-08, awarded to Alice Simmerman. Supplemental support was provided by the Graduate College Support Program at Arizona State University. We are grateful to Dr. Beverly Thinger, school principal, for her support of this project and the teachers, parents, and children of Encanto School, Phoenix, Arizona for their participation. In addition, we would like to thank Nancy Antis for her administrative assistance with the database, Roberta Figueroa for her assistance with the non-English-speaking families, and Dr. Mark Roosa and Dr. Jenn Yun-Tien of Arizona State University’s Prevention Intervention Research Center and the Osborn-ASU Council for design and statistical consultation.

REFERENCES


Received April 19, 1999
Accepted March 21, 2000

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### APPENDIX

**Week of:** November 17–21  
**Theme:** Farms and Farm Animals  
**Week #:** 6

<table>
<thead>
<tr>
<th>Activity</th>
<th>Monday</th>
<th>Tuesday</th>
<th>Wednesday</th>
<th>Thursday</th>
<th>Friday</th>
</tr>
</thead>
<tbody>
<tr>
<td>Morning story</td>
<td><em>I Went Walking</em></td>
<td><em>Rosie’s Walk</em> (dramatize)</td>
<td><em>I Went Walking</em></td>
<td><em>Rosie’s Walk</em> (dramatize)</td>
<td><em>Big Red Barn</em> (clap hands on rhyming words)</td>
</tr>
<tr>
<td>Small Group 1 Language arts</td>
<td>Walk outside; observe sights</td>
<td>Make <em>Rosie’s Walk</em> books</td>
<td>Walk outside; observe sights</td>
<td>Make <em>Rosie’s Walk</em> books</td>
<td>Farm animal concentration</td>
</tr>
<tr>
<td>Small Group 2 Phonological awareness</td>
<td>Sequence pictures/words in rhyme; identify beginning sounds; judge beginning sounds as same/different</td>
<td>Sequence pictures/words in rhyme; identify beginning sounds; judge beginning sounds as same/different</td>
<td>Vocab activity: Milking the cow (see below)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Small Group 3 Art activity</td>
<td>Draw farm animals; make story floor map</td>
<td>Farm animal puppets</td>
<td>Farm animal puppets</td>
<td>Farm animal puppets</td>
<td>Farm animal mural</td>
</tr>
<tr>
<td>Small Group 4 Manipulatives</td>
<td>Sorting farm animals</td>
<td>Manipulating farmer, animals, tractor, fence, etc.</td>
<td>Sorting farm animals</td>
<td>Manipulating farmer, animals, tractor, fence, etc.</td>
<td>Manipulating farmer, animals, tractor, fence, etc.</td>
</tr>
<tr>
<td>Music</td>
<td>“Old McDonald” “Shoo Fly”</td>
<td>“Old McDonald” “Shoo Fly”</td>
<td>“Old McDonald” “Shoo Fly”</td>
<td>“Old McDonald” “Shoo Fly”</td>
<td></td>
</tr>
<tr>
<td>Afternoon story</td>
<td>“Skip to my Lou” (skip and jump)</td>
<td>“Cock-a-Doodle-Doo”</td>
<td>“Skip to my Lou” (skip and jump)</td>
<td>“Cock-a-Doodle-Doo”</td>
<td></td>
</tr>
<tr>
<td>Math/science</td>
<td>Observe and discuss real hens and roosters</td>
<td>Chicken feed math; make, do math, and eat</td>
<td>Observe and discuss real hens and roosters</td>
<td>Chicken feed math; make, do math, and eat</td>
<td></td>
</tr>
</tbody>
</table>

**Target Sounds:**  
/b/ & /f/

**Nouns:** barn, chicken, fence, tractor, farmer

**Verbs:** milk, feed, peck, skip, jump

**Adjectives:** crunchy, sweet, salty, round, wet

**Prepositions:** through, across, over, around, under

**Materials Needed:** (for chicken feed) peanuts, raisins, chocolate chips, cheerios

**Notes:** (to milk the cow) put broomstick between chairs; poke holes in fingers of rubber glove; fill with white paint; tie to stick; pull on fingers to milk.