

**EFFECTIVENESS  
REPORT**

# Building Language for Literacy

**At-Risk Preschoolers**

Bessemer, Alabama

2002–2003



# Building Language for Literacy

**At-Risk Preschoolers**

**Phase One Report:  
First Year Analysis of 3-Year Evaluation**

**Collaboration between the University of Alabama,  
Center for Educational Accountability and the  
Scholastic Research and Evaluation Department**

## EXECUTIVE SUMMARY

This research is designated Phase One of an ongoing project with the University of Alabama (UAB), Center for Educational Accountability and the Bessemer, Alabama preschool community.

With a deep knowledge of research and educational policy effecting preschoolers' literacy development, in addition to a strong commitment to serving the neediest of young learners, Scholastic's Research and Evaluation department partnered with UAB to conduct this quasi-experimental study of Building Language for Literacy (BLL). Building Language for Literacy is a supplemental educational program with the primary goal of equipping preschool-age children with the critical language and literacy skills and experiences they will need to build a solid foundation for success in reading.

The primary objective of the Phase One research was to explore the impact BLL could have on the early literacy skills of disadvantaged children living and attending preschool in a low socio-economic status environment. The goal was to place additional instructional emphasis on early literacy skills and build a stronger foundation for reading, thus attempting to counteract the effects of poverty and low parental education and prepare these at-risk children for later success in kindergarten.

Phase One investigated the following primary research questions:

1. What differential gains are evident on measures of receptive vocabulary for children in classrooms implementing BLL and those in classrooms not implementing BLL? (As measured by the Peabody Picture Vocabulary Test [PPVT].)
2. What differential classroom-level gains are evident on measures of reading readiness (including: concepts of print, expressive language, phonemic awareness, beginning sounds, rhyming, and letter recognition) for children in Head Start classrooms implementing BLL and those not implementing BLL? (As measured by the Language and Emergent Literacy Assessment [LELA] and the Creative Curriculum Developmental Continuum [CCDC].)

Results revealed statistically and practically significant differential gains in favor of children receiving BLL on the PPVT, which measures receptive vocabulary. Students in the BLL Head Start classrooms achieved greater gains than their comparison counterparts on the majority of the LELA items, particularly in terms of phonemic awareness and letter recognition. In addition, BLL Head Start classrooms made greater achievement gains on the CCDC assessment in comparison to children in the non-BLL classes. It is interesting to note that the BLL classrooms outperformed the comparison classrooms on the CCDC for both the early literacy related skills and the other developmental domains measured, including pre-math, physical, and social development.

# INTRODUCTION

## EARLY LITERACY RESEARCH

Over the past 25 years in the United States, the focus and emphasis on early childhood education has shifted. By choice and necessity, more children than ever before are spending significant amounts of time in a learning environment outside the home. At the same time, the requirements for children's school readiness upon entering kindergarten have risen considerably, including articulated standards in many states. In addition, research is consistently revealing the key circumstances and experiences that will enable children to realize their potential and prepare for success in kindergarten and beyond.

Involvement with language, print, and other forms of communication is perhaps the most important of these key components (Brazelton & Greenspan, 2000; Denton & West, 2002; Whitehurst & Lonigan, 2001). The inseparable link between children's early language skills and later reading abilities is consistently being affirmed by a growing body of research (Hart & Risley, 1995; Walker, Greenwood, Hart, & Carta, 1994). Thus, research teaches us that young children require the following oral language opportunities to develop key emergent literacy skills:

- A language-rich environment
- Complex conversations about ideas and opinions
- Hearing and learning new vocabulary
- Discussing books that are read aloud
- Conversing with adults during daily routines and activities

In addition to oral language, the building blocks of early literacy have been identified as phonological awareness, alphabetic knowledge, and print awareness (Burns, Griffin, & Snow, 1999). Therefore it is critical that young children develop the ability to discern the sounds within words, understand sound-symbol correspondence, and recognize that print carries meaning.

## EARLY READING FIRST LEGISLATION

Educational policy is now catching-up with what research has been revealing for years. The *Early Reading First* legislation is one of the first federal initiatives to emphasize the critical importance of literacy skills in early childhood education.

The overall purpose of the *Early Reading First* program is to prepare preschool children to enter kindergarten with the language, cognitive, and early reading skills necessary for reading success, thereby preventing later reading difficulties. The specific purposes of the *Early Reading First* program are as follows (U.S. Department of Education, 2001):

- To support local and state efforts to enhance the early language, literacy, and early reading development of preschool age children, particularly those from low-income families, through strategies and professional development that are based on scientifically based reading research.
- To provide preschool-age children with learning opportunities in high-quality language and literature-rich environments, so they will attain the fundamental knowledge and skills necessary for optimal reading development in kindergarten and beyond.

- To demonstrate language and literacy activities based on reading research that supports the age-appropriate development of:
  - Oral language (vocabulary development, expressive language, and listening comprehension)
  - Phonological awareness (rhyming, blending, and segmenting)
  - Print awareness (tracking print, story structure, the meaning of print)
  - Alphabet knowledge (letter recognition)

## DEVELOPMENT OF BUILDING LANGUAGE FOR LITERACY (BLL)

While developed before Early Reading First, Building Language for Literacy closely aligns with the four foundational early literacy goals of the legislation. Scholastic had an understanding and commitment to the above research, through which they created the Building Language for Literacy (BLL) program with authors, Susan B. Neuman, Ed.D., Catherine E. Snow, Ph.D., and Susan E. Canizares, Ph.D. The primary goal of BLL is to equip preschool-age children with the critical language and literacy skills and experiences they will need to build a solid foundation for success in reading. Thus, the four BLL program goals are:

- Oral language
- Phonological awareness
- Letter knowledge
- Concepts of print

BLL is built around language-loving characters each representing one of the above skills. The program is designed to teach and model positive literacy behaviors, as well as motivate and engage young children. BLL achieves this by building on children's own experiences in their community, fostering multicultural awareness and understanding, and connecting school to home life while encouraging family involvement. BLL is structured according to a typical preschool schedule: Song and Poem Time, Story Time, Choice Time, and Transitions.

## PURPOSE OF PHASE ONE RESEARCH WITH AT-RISK PRESCHOOLERS

Although, links have previously been made between the socioeconomic background of children and their school achievement, current research has refined this thinking with the important understanding that the *quality* of children's early experiences is most critical. Furthermore, high quality early learning can be achieved in a variety of environments and with a variety of caretakers (Collins et al., 2000; Macoby, 1999; Werner, 2000; Ramey & Ramey, 1999).

With this knowledge in mind and a strong commitment to serving the neediest of young learners, Scholastic collaborated with the University of Alabama at Birmingham's Center for Educational Accountability to explore the impact BLL could have on the early literacy skills of disadvantaged children living and attending preschool in a low SES environment. The goal was to place additional instructional emphasis on early literacy skills and build a stronger foundation for reading, thus attempting to counteract the effects of poverty and low parental education and prepare these at-risk children for later success in kindergarten.

## RESEARCH QUESTIONS

This effectiveness study was conducted to address the following primary research questions:

1. What differential gains are evident on measures of receptive vocabulary for children in classrooms implementing BLL and those in classrooms not implementing BLL?
2. What differential classroom-level gains are evident on measures of reading readiness (including: concepts of print, expressive language, phonemic awareness, beginning sounds, rhyming, and letter recognition) for children in Head Start classrooms implementing BLL and those not implementing BLL?
3. What strengths and concerns do participating teachers identify with BLL curricula, materials, and training?
4. What are the major gaps and concerns regarding implementation of BLL based on teacher feedback?

## METHODS

### RESEARCH DESIGN

This research employed a quasi-experimental study design with experimental and control groups receiving pretest/posttest procedures for evaluating gains. Baseline achievement differences on the receptive vocabulary measure administered during initial screenings of all eligible children were adjusted for by using ANOVA and ANCOVA procedures. Unfortunately, due to the need to secure participation of sites, an initial plan for random assignment of classroom to treatment condition was not possible. Children in both experimental and control groups were pre- and posttested on the selected measurements. Teachers were surveyed and interviewed concerning implementation of BLL in the classrooms.

This study called for an initial screening of all children attending a variety of daycare programs in the socio-economically disadvantaged community of Bessemer, Alabama. Therefore, there was a variety of early childhood settings selected for both the experimental and control groups. (See Sample Characteristics.) It is important to note that this study did not control for existing curriculum, teaching methods, or teacher background and experience for both BLL and non-BLL classrooms.

In order to support the study, Head Start administrators agreed to provide the project with fall and spring summary data from their reading readiness assessment and classroom environment records for both BLL and non-BLL Head Start classrooms. These additional measurements were analyzed for the Head Start classrooms to provide a more detailed picture of the impact BLL has on emergent literacy skills with comparable groups of children within a single Head Start center.

### MEASUREMENTS

**Achievement:** Three quantitative assessments were used to measure the achievement outcomes for preschoolers in this study. All of these tests were administered individually and were designed specifically for use with young children. They included the following:

**The Peabody Picture Vocabulary Test (PPVT: Third Edition)**—An untimed, norm-referenced assessment that can be administered to persons aged 2.5 to 90+ years. The PPVT is designed to measure verbal ability, vocabulary acquisition, and English language development. It is considered particularly useful in evaluating preschool-age children’s receptive vocabulary.

**The Language and Emergent Literacy Assessment (LELA)**—Designed by the JCCEO Child Development Services for use with Head Start children. It is typically administered three times per year for screening, progress monitoring, and kindergarten readiness purposes. The LELA is an individually administered scale which evaluates the following emergent literacy skills: Book Knowledge, Expressive Language, Beginning Sounds, Phonemic Awareness, Rhyming Words, and Letter Recognition

**Creative Curriculum Developmental Continuum (CCDC)**—The CCDC is an observational measure that assesses child performance in fifty areas within the developmental domains of: Sense of Self, Responsibility for Self and Others, Prosocial Behavior, Gross Motor, Fine Motor, Symbolic Thinking, Language Development, and Reading and Writing. The instrument is designed for children ages 3 to 5. Teachers collect anecdotal observations of behaviors, which reflect each of the 50 areas during the fall, winter, and spring. These observations are rated using 4 level rubrics designed for each of the 50 areas. The minimum score is zero. The maximum score is a 4. The instrument is similar in structure and scoring to the High Scope Child Observation Record.

PPVT data was available for all children in the study. However, LELA and CCDC data were only available for the subset of Head Start children, since such measures were administered as part of routine data collection in that center and not within all programs.

**Classroom Quality and Implementation:** Two qualitative measures were used to monitor treatment fidelity and implementation concerns. They are as follows:

**Implementation Surveys :** Simple checklist for researchers to monitor how many times per week teachers used BLL in each of the four main activity areas: Song and Poem Time, Story Time, Choice Time, and Transitions. Teachers completed this checklist for each of the 6 BLL units: Home, Store, Restaurant, Firehouse, Farm, and Aquarium

**Teacher Interviews :** BLL Classroom Implementation Survey was administered in survey and group interview format during on-site visits. Questions addressed the following areas:

- Characteristics of children and classroom routines
- Using BLL program materials in the classroom
- Curriculum implementation
- Strengths of BLL curriculum
- Challenges of implementing BLL

## SAMPLE CHARACTERISTICS

### Classrooms and Students

Two hundred and twenty-six (226) children from a variety of daycare settings in Bessemer, Alabama were initially screened for hearing and receptive vocabulary on the PPVT during the late summer and early fall of 2002. These settings included the following: One Head Start center with 5 classrooms (87 children screened); one Even Start center with one classroom (17 children screened); and an ARC program with

1 classroom (19 children screened). In addition, the largest private (church-based) center provided 63 children for screening.

Seven of the day care settings initially screened were recruited for participation in this study. Three centers were exclusively assigned to the treatment condition and two centers were exclusively assigned to control status. Two preschool centers had some classrooms assigned to receive BLL and others that were assigned to the control condition. In total, seven classrooms served as experimental sites receiving BLL and four classrooms served as comparison sites.

Approximately, 90% of the screened children were African American, 8% Hispanic, and 2% Caucasian or other racial group.

Since, these early childhood settings operated under different management and regulations, there was not one standard early childhood curriculum implemented across the classrooms. Programming included Creative Curriculum supplemented by local curriculum (Head Start), ABECA (one church-based Pre-K), and locally developed direct care curriculum (one church-based Pre-K). Classrooms not receiving BLL continued with their traditional curriculum, while the experimental classrooms added BLL to their daily schedule.

## BASELINE TESTING

Fall PPVT scores ranged from 48 to 121 (Mean=85.7, SD=13.48). The average score of approximately 86 indicates that the children in this sample performed at about the 17<sup>th</sup> percentile nationally. That is, the average child in this study at baseline performed better than only 17 percent of children in the national norming sample for the PPVT matched for age.

Baseline testing revealed that students in the BLL group scored initially lower in their average PPVT performance. The mean PPVT standard score for students in the treatment group was 82.58 (n=96, SD=13.9). The mean PPVT standard score for the control group was 86.79 (n=89, SD=12.10). However, the availability of repeated measures ANOVA and analysis of covariance statistical procedures enabled researchers to statistically adjust for pretest differences in the groups without reducing statistical power. Therefore, the overall mean for students in the study sample (Mean=84.61) was slightly lower than that of all Pre-K children initially screened in the summer/fall of 2002 (Mean=85.7).

Pretest and posttest data was available for 71 students in the treatment group and 68 students in the control group. This analysis of gains will be limited to the paired pretest-posttest sample only.



# FINDINGS

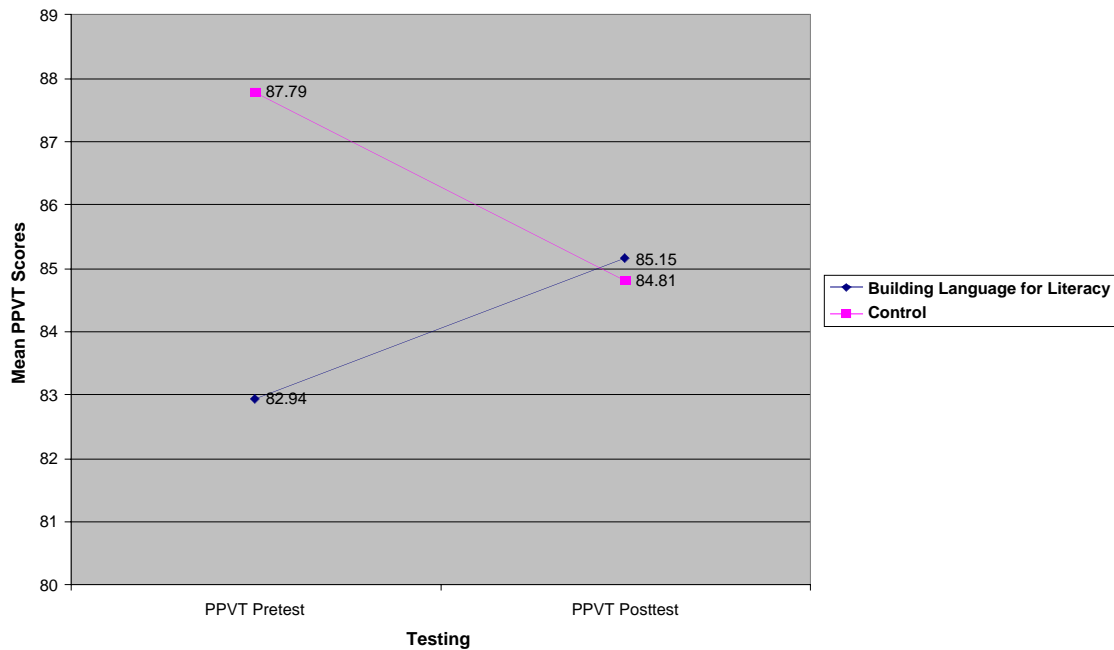
## RESULTS: PPVT ACHIEVEMENT

Several different statistical procedures were used to evaluate the nature and extent of gains on PPVT scores. Results revealed that BLL had a positive impact on PPVT performance for children receiving the program relative to children not receiving the program. Students in the treatment (BLL) group improved from a mean of 82.94 to 85.15 on the PPVT, while students in the comparison group declined from a mean of 87.79 to 84.81 on the PPVT at posttest. These descriptive statistics are presented in Table 1 and Graph 1 below.

**TABLE 1: Descriptive Statistics**

	Condition	Mean	Std. Deviation	N
PPVT Standard Score	BLL	82.94	12.340	71
Fall 2002	Comp	87.79	11.466	68
	Total	85.32	12.124	139
PPVT Standard Score	BLL	85.15	13.026	71
Spring 2003	Comp	84.81	13.423	68
	Total	84.99	13.175	139

**GRAPH 1: Mean Peabody Picture Vocabulary Test (PPVT) Scores from Pretest to Posttest**



## ANALYSIS OF VARIANCE (ANOVA)

A repeated measures ANOVA (Analysis of Variance) was conducted to ascertain whether the differences observed were greater than would have occurred due to sampling variations alone. Within such an analysis, the critical test is that of an interaction effect between time and grouping variable, as opposed to the main effects of time and grouping condition alone. Table 2 presents the results of the repeated measures analysis.

**TABLE 2: Multivariate Tests<sup>b</sup>**

Effect		Value	F	Hypothesis df	Error df	Sig.
TIME	Pillai's Trace	.001	.196 <sup>a</sup>	1.000	137.000	.658
	Wilks' Lambda	.999	.196 <sup>a</sup>	1.000	137.000	.658
	Hotelling's Trace	.001	.196 <sup>a</sup>	1.000	137.000	.658
	Roy's Largest Root	.001	.196 <sup>a</sup>	1.000	137.000	.658
TIME * TREATCON	Pillai's Trace	.061	8.845 <sup>a</sup>	1.000	137.000	.003
	Wilks' Lambda	.939	8.845 <sup>a</sup>	1.000	137.000	.003
	Hotelling's Trace	.065	8.845 <sup>a</sup>	1.000	137.000	.003
	Roy's Largest Root	.065	8.845 <sup>a</sup>	1.000	137.000	.003

<sup>a</sup>Exact statistic

<sup>b</sup>Design: Intercept + TREATCON  
Within Subjects Design: TIME

The table reveals that the main effect for time was not significant at  $F = .196$ ,  $p = .658$ . In addition, the main effect for condition was not significant at  $F = 1.34$ ,  $p = .250$ . This merely indicates that the average scores for treatment and comparison groups across time were not greater than would have occurred due to sampling fluctuation alone.

However, there is a significant interaction effect between time and treatment condition, which is significant at  $F = 8.85$ ,  $p = .003$ . This analysis reveals that the differences in PPVT scores from pre to posttest for children receiving BLL vs. children not receiving BLL are statistically significant. This interaction between time and grouping variable (BLL or comparison) accounted for 6.1% of the total variability in the scores.

## ANALYSIS OF COVARIANCE (ANCOVA)

An additional analytical approach to the data is the analysis of covariance or ANCOVA. This statistical procedure examines posttest differences after mathematically adjusting for differences between the treatment group and the control group at pretest. (See Table 3.) Since, descriptive data revealed PPVT standard score differences at pretest for the two groups (the BLL group had a lower average PPVT standard score), ANCOVA is a critical analysis for this data set. Analysis of covariance allows researchers to estimate what the posttest scores would be if the pretest performance of the groups were equivalent.

Table 3 presents the consequences of the ANCOVA. When group PPVT pretest scores are equated to a common value of 85.32, the resulting differences in posttest scores favor students in the treatment (BLL) group. The adjusted mean PPVT scores after the ANCOVA is 86.92 for the BLL group and 82.97 for the comparison group. (See Table 4.) Thus, the analysis of covariance confirms what the ANOVA already revealed. The two analyses yield consistent findings regarding the statistically significant difference in gains between the BLL group and the control group on the PPVT.

**TABLE 3: Tests of Between-Subjects Effects**

Dependent Variable: PPVT Standard Score Spring 2003

Source	Type III Sum Of Squares	Df	Mean Square	F	Sig.	Eta Squared
Corrected Model	10721.585 <sup>a</sup>	2	5360.793	55.097	.000	.448
Intercept	1227.674	1	1227.674	12.618	.001	.085
V9	10717.425	1	10717.425	110.152	.000	.447
CONDITION	518.762	1	518.762	5.332	.022	.038
Error	13232.386	136	97.297			
Total	1027889.000	139				
Corrected Total	23953.971	138				

<sup>a</sup>R Squared = .448 (Adjusted R Squared = .439)

**TABLE 4: Adjusted Mean PPVT Scores**

Dependent Variable: PPVT Standard Score Spring 2003

Condition	Mean	Std. Error	95% Confidence Interval	
			Lower Bound	Upper Bound
BLL	86.915 <sup>a</sup>	1.183	84.577	89.254
Comp	82.971 <sup>a</sup>	1.209	80.580	85.361

<sup>a</sup>Evaluated at covariates appeared in the model: PPVT Standard Score Fall 2002 = 85.32.

### EFFECT SIZE

An important method for understanding the relevance and magnitude of the differential gains is by considering the effect size (ES). Effect sizes are critical in evaluating the effectiveness of educational programs. They are standardized measures of difference that inform research and policy makers concerning the practical significance of research findings. Effect sizes convert statistical findings to indexes that can be compared within and across studies.

The general equation for computing effect sizes is as follows: gain scores for the treatment group minus gain scores for the control group divided by the standard deviation of the control group. By computing this equation, the effect size for this study is ES = .4. The effect size of .4 indicates that the average student in the BLL group makes improvements that are .4 standard deviations greater than the control group. An effect size of .33 or greater is considered to be educationally meaningful. Therefore, the effect size of .4 for this research confirms that the differences in PPVT performance between the BLL group and the control group are not only statistically significant, but also educationally meaningful.

(Please note that the Center for Educational Accountability has run an additional analysis to address concerns about preexisting differences in conditions. This process involved matching subjects at pretest. Details can be found in Appendix D.)

### RESULTS: LELA ACHIEVEMENT

As discussed above, the Language and Emergent Literacy Assessment (LELA) was administered to all Head Start children (both BLL and non-BLL) in this study. LELA data could only be reported aggregated to the classroom level, because no consent was provided for individual release of the student outcomes. However, data analysis was able to reveal the percentage of children within BLL Head Start classrooms vs. control Head Start classrooms who successfully performed the various LELA tasks at pre- and posttest. (See Appendix A.)

Analysis reveals that children in both groups made substantial gains on all LELA competencies. Therefore, this research is particularly interested in the extent to which students in the BLL classrooms

made greater gains across the academic year than were made by students in the comparison Head Start classrooms. For example, 77.3% of children in the Head Start BLL classes acquired the ability to “show me the name of the person who wrote this book” on the LELA. Similarly, 50.4% of children in the non-BLL Head Start classes acquired this same skill during the same time frame of the 2002–2003 school year. Therefore, on average, 26.9% more students in the BLL classrooms achieved the print concepts skill of identifying the author than students in non-BLL classrooms.

**The following is a list of LELA skills for which the BLL classrooms demonstrated differential percentage gains of greater than 15% when compared to the non-BLL Head Start classes:**

- Identify name of author (Book Knowledge)
- Identify name of illustrator (Book Knowledge)
- Identify where to start reading the book (Book Knowledge)
- Introduce a story during retelling (Expressive Language)
- Phonemic awareness of the multisyllabic word “elephant” (Phonemic Awareness)
- Identify the word that rhymes with “box” (Rhyming)
- Recognize 25 of 26 uppercase letters (Letter Recognition)
- Recognize 25 of 26 lowercase letters (Letter Recognition)

**The following is a list of skills for which non-BLL Head Start classrooms demonstrated differential percentage gains of greater than 15% when compared to the BLL classes:**

- Identify the word that begins with the beginning sound of “sun” (Beginning Sounds)
- Identify the word that begins with the beginning sound of “kite” (Beginning Sounds)
- Identify the word that rhymes with “man” (Rhyming)

**Overall, an examination of the LELA summary data reveals the following trends:**

- The greatest differential percentage gains (greater than 20%) favored BLL Head Start classrooms on several book knowledge items and both upper- and lowercase letter recognition.
- BLL classrooms achieved higher passing rates on the LELA: Book Knowledge items at the end of the school year.
- End-of-year passing rates for the LELA: Beginning Sounds subtest were higher for the BLL classrooms.
- BLL classrooms demonstrated greater posttest performance and greater differential percentage gains on all the phonemic awareness items.
- With exception of the lowercase letter “q”, the BLL classrooms were considerably more successful in letter recognition than non-BLL classrooms.
- Aside from introducing the story, children in the non-BLL classrooms made greater gains in various aspects of expressive language, including orally retelling a familiar story.

## RESULTS: CCDC ACHIEVEMENT

Although, the majority of behaviors that are observed in the Creative Curriculum Developmental Continuum (CCDC) are not directly related to literacy, there are still some interesting trends worth noting.

**Of the 50 skills rated on the CCDC, average differential rating gains favored BLL classrooms on 41 of those skills. Seven of these skills are specifically related to literacy.**

They are as follows:

- Hears and discriminates the sounds of language
- Demonstrates understanding of print concepts
- Demonstrates knowledge of the alphabet
- Uses emerging reading skills to make meaning from print
- Comprehends and interprets meaning from books and other texts
- Understands the purpose of writing, and writes letters and words

Differential CCDC rating gains favored BLL classrooms on all of these skills, as well as the four skills directly related to verbal interactions. Those items include:

- Understands and follows oral directions
- Answers questions
- Asks questions
- Actively participates in conversations (See Appendix B.)

For the literacy items, the greatest gains were observed in the BLL classrooms: knowledge of the alphabet, comprehending and interpreting books and other text, and writing letters and words. The differential rating gain for print concepts also favored the BLL classrooms, although it's interesting to note that the gain was considerably smaller than that observed with the LELA.

## RESULTS: CLASSROOM QUALITY AND IMPLEMENTATION

Teachers implementing BLL were surveyed and/or interviewed concerning their reactions to the curriculum, training received, and additional needs. (See Appendix C.) Major trends included the following:

- Teachers reported observing children gaining skills in vocabulary, expressive language, and rhyming, as well as taking pride in their accomplishments.
- Teachers reported great appreciation of the monthly workshops, books, cassettes, and implementation guide.
- The greatest challenge reported by teachers was incorporating BLL within their existing curriculum.
- Most teachers did not identify any component of BLL as confusing.
- Teachers indicated they learned several important things through implementing BLL:
  - The benefit of a variety of learning, playing, and reading activities to promote early literacy

- The benefit of continued professional development
- The benefit of peer collaboration and sharing
- Teachers recommended the use of videotaped workshops to illustrate the appropriate implementation of BLL in the classroom.
- Teachers recommended additional cassettes, songs and poems on CDs, and more big books and trade books for each unit.
- All respondents indicated that the pace and intensity of professional development was adequate.

In addition to the above, teachers in each participating BLL classroom were asked to indicate the number of days per week during which they included BLL in each of the four key program areas: Song and Poem Time, Story Time, Choice Time, and Transitions. As can be seen from Table 5 below, the time of the day during which BLL was most frequently implemented during each unit was Story Time, with an average of at least four days per week across units. For the Home, Store, and Aquarium units, all classrooms reported implementing BLL during Story Time. Song and Poem Time was the second most frequent activity area during which BLL was implemented. Teachers reported that Song and Poem activities were implemented on average at least three to four days per week across units. Transitions had the lowest level of BLL implementation with reported levels across all units of less than three times per week on average. A number of teachers did not report implementation of Transition activities at all during any BLL unit.

Two features of the BLL implementation data warrant caution. First, the data was self-reported by teachers. For some units, the teachers were relying on their memory of implementing the unit completed one month previously. Therefore, there is no absolute validation of the implementation frequencies, and reports may be clouded by errors of recall. Secondly, the self-reports of implementation should not be interpreted as evidence of complete and accurate implementation of the specific learning activities recommended in BLL.

Nevertheless, the findings reveal that there is some variability in perceived levels of implementation across the four main BLL activity areas. It is reasonable, based on the data, to conclude that teachers invested less time and energy in assuring implementation of the Transition activities than they did of Story Time activities.

**TABLE 5: Average Number of Days for BLL Phase One Implementation Across Activity Areas**

BLL Unit—Phase 1	Song and Poem Time	Story Time	Choice Time	Transitions
Home	4.38	5.00	3.38	2.63
Store	4.38	5.00	3.00	2.25
Restaurant	3.68	4.13	2.75	1.88
Firehouse	3.38	4.13	2.75	2.00
Farm	3.87	4.38	2.63	1.75
Aquarium	3.25	5.00	2.88	2.75
<b>Average Number of Days per week</b>	3.87 days	4.6 days	2.89 days	2.21 days

## CONCLUSION

### EFFICACY CONCLUSIONS

Although, this study was not able to employ random assignment, there is strong evidence indicating that children who were in classrooms where BLL was implemented performed significantly better on a number of performance measures than children who did not receive the curriculum. **Statistically and practically significant differential gains were revealed on the PPVT, which measures receptive vocabulary.** The nature of this effect was troubling, however, as students in the control group actually had average *losses* of approximately 3 points on the PPVT scale, thus producing statistically significant differences between the two treatment groups.

Two additional child performance measures were administered in the Head Start classrooms that served as treatment and control classes in this research. The benefit of this more restricted analysis was that all Head Start classes were nested within a single center, using the same curriculum, and with the same eligibility criteria for receiving services. Therefore, classroom resources, curricular practices, scheduling of classroom activities, teacher characteristics, and characteristics of the children and families served within the center can be considered equivalent with the exception of exposure to the BLL materials. **Students in the BLL Head Start classrooms made greater gains than their comparison counterparts on the majority of the LELA items, particularly in terms of phonemic awareness and letter recognition. In addition, BLL classrooms achieved greater gains on the CCDC assessment in comparison to children in the non-BLL classes.** It's interesting to note that BLL classrooms performed higher on the CCDC for both the early literacy related skills and the other developmental domains measured, including pre-math, physical, and social development.

### RESEARCH IMPLICATIONS

This research is designated Phase One of an on-going project with the University of Alabama Center for Educational Accountability and the Bessemer, Alabama preschool community.

Based on study outcomes and experiences during Phase 1, the critical need to closely monitor program implementation was reinforced. Supplemental programs at the early childhood level, such as BLL, require extensive and appropriate training, ongoing professional development, and monitoring of implementation by supervisors and administrators. Research has revealed that teachers may require assistance and guidance in the following key areas:

- Understanding the core components of early literacy: oral language, phonemic awareness, alphabetic knowledge, and concepts of print
- Understanding how to teach and reinforce those key areas throughout the preschool day
- Implementing BLL in conjunction with their existing curriculum
- Why, how, and when to use BLL with Transitions
- How to immerse literacy and concepts of print in all learning centers
- How to encourage early writing skills
- How to conduct successful shared reading with the BLL materials

Effectiveness research of BLL is currently in Phase Two, which is expected to be complete by summer, 2004. The Phase Two evaluation has benefited extensively from Phase One strengths and challenges, and therefore has implemented the following modifications:

- Systematic documentation of BLL implementation
- Ongoing teacher support for implementation of the BLL curriculum
- Reduced baseline variability between BLL and non-BLL classrooms
- Additional assessments and data collection regarding language and literacy focused outcomes
- Collection of information concerning family literacy practices with the goal of monitoring the mediating effects of family practices on BLL outcomes

As research consistently reveals the importance of kindergarten readiness and the long-standing impact of the “Matthew Effect,” it is expected that Phase Two of this evaluation will continue to demonstrate the important advantage that an early literacy program can produce for at-risk children in preparing them for later academic success.



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# APPENDIX A

## LELA PRETEST/POSTTEST GAINS

	BLL Fall PRE	BLL Spring POST	Non-BLL Fall PRE	Non-BLL Spring POST	Differential BLL gain
<b>BOOK KNOWLEDGE</b>					
Show me the front of the book so that we can read it	69.7	98.3	62.6	93.2	-1.97
Show me the name of the book	59.0	93.3	54.9	86.1	3.17
Show me the name of the person who wrote the book	7.7	85.0	22.2	72.6	26.90
Show me the name of the person who drew the pictures in the book	5.7	78.3	16.3	65.9	23.10
Point to where I need to start reading	3.7	58.3	11.9	43.5	23.00
Using your finger, show me how you would read the words on this page	24.5	80.0	31.4	74.2	12.73
Show me a letter	60.1	98.3	46.3	89.7	-5.27
Show me where the story ends	56.3	95.0	42.5	72.6	8.50
Show me a word	20.7	76.7	20.1	67.3	8.87
<b>EXPRESSIVE LANGUAGE</b>					
Beginning—Does the child introduce the story?	13.3	81.7	30.1	81.0	17.47
Setting—Does the child tell you where the story takes place?	30.2	73.3	21.5	75.9	-11.17
Characters—Does the child identify the characters?	52.9	88.3	51.1	93.2	-6.77
Sequence—Does the child tell the story in order?	22.9	75.0	21.7	81.5	-7.73
Ending—Does the child say what happened at the end of the story?	17.2	73.3	18.3	88.0	-13.57
<b>BEGINNING SOUNDS</b>					
Can you tell me the word that has the same beginning sound as my word? My word is ruler.	39.8	66.7	21.4	51.9	-3.70
Can you tell me the word that has the same beginning sound as my word? My word is bus.	54.9	75.0	35.1	67.3	-12.03
Can you tell me the word that has the same beginning sound as my word? My word is monkey.	34.0	70.0	27.1	67.3	-4.20
Can you tell me the word that has the same beginning sound as my word? My word is sun.	37.8	73.3	7.8	62.2	-18.90
Can you tell me the word that has the same beginning sound as my word? My word is hat.	34.2	71.7	21.7	58.8	0.40
Can you tell me the word that has the same beginning sound as my word? My word is ladder.	34.3	76.7	13.6	64.1	-8.13
Can you tell me the word that has the same beginning sound as my word? My word is dog.	33.9	86.7	32.9	71.1	14.67
Can you tell me the word that has the same beginning sound as my word? My word is kite.	56.6	76.7	41.1	77.9	-16.80
<b>PHONEMIC AWARENESS</b>					
Tiger	47.1	93.3	38.3	70.5	14.03
Monkey	54.6	91.7	46.2	68.9	14.37
Zebra	49.1	90.0	40.5	75.8	5.57
Elephant	35.8	81.7	30.6	55.5	20.87
<b>RHYMING WORDS</b>					
Can you find the word that sounds like my word? My word is cat.	58.4	90.0	50.4	79.4	2.63
Can you find the word that sounds like my word? My word is man.	45.5	73.3	26.8	71.1	-16.43
Can you find the word that sounds like my word? My word is box.	22.5	75.0	34.0	70.9	15.67
Can you find the word that sounds like my word? My word is car.	49.0	88.3	43.0	77.5	4.80

## LETTER RECOGNITION PRETEST/POSTTEST GAINS

ASSESSMENT	BLL Fall	BLL Spring	Non-BLL Fall	Non-BLL Spring	Differential BLL gain
	PRE	POST	PRE	POST	
Z	17.6	60.0	14.3	10.5	46.20
A	5.9	80.0	28.6	42.1	60.60
Y	5.9	50.0	7.1	15.8	35.40
B	29.4	75.0	42.9	47.4	41.10
X	11.8	65.0	0.0	10.5	42.70
C	11.8	50.0	7.1	21.1	24.20
W	17.6	50.0	7.1	15.8	23.70
D	11.8	80.0	14.3	47.4	35.10
V	0.0	30.0	0.0	5.3	24.70
E	11.8	60.0	7.1	26.3	29.00
U	11.8	45.0	7.1	26.3	14.00
F	11.8	65.0	0.0	10.5	42.70
T	23.5	85.0	7.1	36.8	31.80
G	11.8	50.0	7.1	15.8	29.50
S	11.8	75.0	0.0	15.8	47.40
H	5.9	65.0	0.0	10.5	48.60
R	0.0	55.0	7.1	15.8	46.30
I	0.0	40.0	7.1	31.6	15.50
Q	0.0	85.0	0.0	21.1	63.90
J	11.8	70.0	14.3	26.3	46.20
P	11.8	60.0	14.3	26.3	36.20
K	5.9	80.0	7.1	36.8	44.40
O	23.5	65.0	7.1	21.1	27.50
L	5.9	35.0	7.1	10.5	25.70
N	17.6	40.0	0.0	5.3	17.10
M	5.9	35.0	0.0	10.5	18.60
z	11.8	60.0	0.0	10.5	37.70
a	0.0	50.0	7.1	26.3	30.80
y	5.9	40.0	21.4	5.3	50.20
b	0.0	45.0	14.3	15.8	43.50
x	11.8	65.0	0.0	26.3	26.90
c	11.8	50.0	7.1	26.3	19.00
w	29.4	55.0	14.3	21.1	18.80
d	5.9	55.0	7.1	15.8	40.40
v	0.0	30.0	0.0	0.0	30.00
e	5.9	75.0	7.1	15.8	60.40
u	11.8	50.0	7.1	26.3	19.00
f	5.9	35.0	0.0	10.5	18.60
t	0.0	65.0	7.1	21.1	51.00
g	0.0	20.0	0.0	10.5	9.50
s	5.9	75.0	0.0	26.3	42.80
h	0.0	40.0	0.0	5.3	34.70
r	0.0	60.0	7.1	5.3	61.80
i	0.0	55.0	0.0	15.8	39.20
q	0.0	5.0	0.0	10.5	-5.50
j	5.9	65.0	0.0	15.8	43.30
p	5.9	45.0	0.0	21.1	18.00
k	11.8	75.0	7.1	15.8	54.50
o	17.6	70.0	7.1	31.6	27.90
l	0.0	35.0	0.0	0.0	35.00
n	0.0	40.0	0.0	10.5	29.50
m	5.9	40.0	0.0	21.1	13.00

<b>APPENDIX B</b>	<b>BLL</b>	<b>BLL</b>	<b>Non-BLL</b>	<b>Non-BLL</b>	<b>Differential</b>
<b>CREATIVE CURRICULUM PRETEST/POSTTEST GAINS</b>	<b>Fall</b>	<b>Spring</b>	<b>Fall</b>	<b>Spring</b>	<b>BLL gain</b>
<b>QUESTIONS</b>	<b>PRE</b>	<b>POST</b>	<b>PRE</b>	<b>POST</b>	
Shows ability to new situations	0.96	2.48	1.14	2.33	0.32
Demonstrates appropriate trust in adults	0.96	2.51	1.25	2.30	0.50
Recognizes own feelings and manages them appropriately	0.87	2.40	1.26	2.30	0.48
Stands up for rights	1.07	2.04	1.13	2.19	-0.09
Demonstrates self-direction and independence	1.06	2.35	1.19	2.32	0.17
Takes responsibility for own well-being	1.12	2.35	1.23	2.27	0.19
Respects and cares for classroom environment and materials	1.04	2.39	1.14	2.21	0.28
Follows classroom routines	1.02	2.39	1.18	2.28	0.27
Follows classroom rules	1.15	2.34	1.18	2.23	0.14
Plays well with other children	1.20	2.38	1.35	2.41	0.13
Recognizes the feelings of others and responds appropriately	0.99	2.37	1.17	2.32	0.23
Shares and respects the rights of others	1.13	2.33	1.27	2.30	0.18
Uses thinking skills to resolve conflicts	1.01	2.28	1.07	2.26	0.08
Demonstrates basic locomotor skills (running, jumping, hopping, galloping)	1.51	2.66	1.35	2.53	-0.03
Shows balance while moving	1.30	2.66	1.67	2.53	0.50
Climbs up and down	1.83	2.71	1.77	2.65	0.01
Pedals and steers a tricycle (or other wheeled vehicle)	1.38	2.56	1.08	2.40	-0.14
Demonstrates throwing, kicking, and catching skills	1.29	2.57	1.25	2.40	0.13
Controls small muscles in hands	1.34	2.47	1.14	2.39	-0.12
Coordinates eye-hand movement	1.17	2.39	1.15	2.39	-0.02
Uses tools for writing and drawing	1.21	2.47	1.28	2.39	0.16
Observes objects and events with curiosity	0.92	2.12	1.18	2.18	0.20
Approaches problems flexibly	0.90	2.14	1.16	2.19	0.21
Shows persistence in approaching tasks	1.19	2.14	1.10	2.18	-0.13
Explores cause and effect	0.94	1.97	1.09	2.04	0.08
Applies knowledge or experience to a new content	0.99	2.12	1.09	2.14	0.08
Classifies objects	0.94	2.09	1.10	2.18	0.07
Compares/Measures	1.05	2.04	1.07	2.13	-0.06
Arranges objects in a series	0.84	2.16	1.09	2.19	0.22
Recognizes patterns and can repeat them	0.91	2.23	1.12	2.28	0.15
Shows awareness of time concepts and sequence	1.16	2.13	1.15	2.16	-0.04
Shows awareness of position in space	1.07	2.18	1.12	2.18	0.06
Uses one-to-one correspondence	1.24	2.23	1.18	2.18	0.00
Uses number and counting	1.53	2.38	1.60	2.49	-0.04
Takes on pretend roles and situations	1.00	2.29	1.14	2.23	0.19
Makes believe with objects	1.05	2.28	1.07	2.25	0.05
Makes and interprets representations	0.97	2.20	1.09	2.28	0.04
Hears and discriminates the sounds of language	0.95	2.18	1.18	2.25	0.17
Expresses self using words and expanded sentences	1.38	2.37	1.57	2.42	0.14
Understands and follows oral directions	1.41	2.47	1.57	2.53	0.10
Answers questions	1.16	2.38	1.55	2.44	0.33
Asks questions	0.97	2.29	1.35	2.28	0.39
Actively participates in conversations	1.04	2.35	1.35	2.35	0.31
Enjoys and values reading	1.08	2.34	1.29	2.38	0.17
Demonstrates understanding of print concepts	1.05	2.22	1.09	2.21	0.05
Demonstrates knowledge of the alphabet	0.99	2.27	1.15	2.19	0.23
Uses emerging reading skills to make meaning from print	0.88	2.15	1.07	2.14	0.19
Comprehends and interprets meaning from books and other texts	0.90	2.25	1.09	2.21	0.23
Understands the purpose of writing	0.84	2.08	1.09	2.12	0.20
Writes letters and words	1.14	2.28	1.18	2.12	0.21

## APPENDIX C

### Teacher Responses to Open-Ended Survey Questions Concerning Implementation of BLL

Q. What, if anything, in BLL was confusing for you?

- Nothing was confusing. (2)
- All information was clear.
- How a typical BLL day runs was confusing. Possibly, include the demonstration of a typical BLL day with the program.
- Teacher guide should be organized better, week-by-week (plans, posters, music).
- No response. (4)

Q. What was the most challenging part of BLL for you?

- Trying to incorporate BLL with other Head Start curriculum. (4)
- Teaching songs from the cassettes.
- To implement strategies and lessons, particularly in the Learning Centers, because of their lack of materials.
- No response. (3)

Q. What area(s) would you have preferred more help in?

- Mentor should assist in classroom at least once a month.
- Nothing at this time.
- Incorporating the full program into the classroom schedule and routine. (2)
- BLL classroom organization and setup.
- Modifying use of materials for certain lessons and activities.
- Classroom coaching.
- No response. (2)

Q. What did you enjoy the most with BLL?

- BLL was a terrific and exciting learning experiment.
- The different books and cassettes that came with the charts.
- Using Nina's Word Cards.
- The children were able to widen their vocabulary and rhyming skills.
- Children were able to extend their rhyming words.
- The shared reading lessons.
- The guide to help implement themes in the classroom.
- The materials, mentees, and workshops.
- Meeting as a group and sharing ideas/activities.
- The monthly workshop.

**Q. What is the most important thing you learned while implementing BLL?**

- Learned to accept different challenges while participating in a structured learning experiment.
- Children learn to read from a variety of ways, including remembering different pictures and using them in sentences.
- Children learn from a wide range of activities. (2)
- All the ideas for phonological awareness and language development as a whole.
- Sharing ideas with colleagues.
- How to develop and emphasize oral language.
- There is a need for appropriate professional development.
- Sharing and working with my peers.

**Q. How could the BLL program be improved for you?**

- Use of video training and modeling along with the BLL program. (2)
- More hands-on materials for children who have a difficult time understanding sequencing (beginning, middle, and end).
- More cassettes and videos.
- Theme object list.
- CD's for songs and big books.
- More manipulatives for students.
- More time to visit other classrooms.
- More trade books for each unit.
- No response.

**Q. How was the pace and intensity of the professional development?**

- Great and exciting learning experiment for me.
- Okay.
- It was fine.
- I look forward to the sharing of ideas. Staff always makes it interesting.
- Smooth and great.
- Like the flexibility.
- Needs to be more professional development.
- Consistent, very informative, and interactive.
- No response.

**Q. What ideas do you have for future projects?**

- Preschedule meetings and times to eliminate confusion.
- Use of video training with the program. (2)
- Define objectives that children should learn each day of the week, or week of the month.
- Swap site participation among teachers.
- No response. (4)

## APPENDIX D

### BLL Updated Matched-Pairs Analysis

In light of concerns expressed by an independent review of the initial Phase One report, the Center for Educational Accountability has undertaken additional statistical analysis of the Year One PPVT data using the group-equating process initially proposed for the study. This process involved matching subjects at pretest based on stanines.

Given the existence of pretest differences in PPVT standard scores between treatment and comparison groups, an equating process was conducted to match treatment and comparison subjects based on pretest stanine scores. Eighty subjects in each group were matched on PPVT pretest stanine yielding a pretest mean of 85.45 for the BLL students and 85.56 for the comparison students confirming pretest equivalence ( $t = -.061$ ,  $p = .952$ ).

Repeated measures ANOVA using this sample resulted in a final pretest/posttest sample of 62 subjects in the BLL condition and 61 subjects in the treatment condition. Matching resulted in a significant condition by time interaction (Wilks' Lambda = .938,  $p = .005$ ) and a nonsignificant effect for time ( $p = .525$ ). The loss of subjects due to absence of posttest data resulted in shifts in PPVT pretest standard score means (BLL pretest mean = 84.71, comparison pretest mean = 87.00).

	TREATCON	Mean	Std. Deviation	N
PPVT Standard Score Fall 2002	BLL	84.71	11.748	62
	Comparison	87.00	11.597	61
	Total	85.85	11.682	123
PPVT Standard Score Spring 2003	BLL	86.77	11.922	62
	Comparison	83.74	13.315	61
	Total	85.27	12.672	123

Therefore, attrition had a differential impact on the samples. ANCOVA using pretest scores as the covariate yielded a significant treatment effect ( $p = .011$ ).

Dependent Variable: PPVT Standard Score Spring 2003

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	8060.402 <sup>a</sup>	2	4030.201	41.939	.000
Intercept	1518.922	1	1518.922	15.806	.000
Pretest	7776.898	1	7776.898	80.927	.000
Treatment Cond.	646.962	1	646.962	6.732	.011
Error	11531.744	120	96.098		
Total	913886.000	123			
Corrected Total	19592.146	122			

<sup>a</sup>R Squared = .411 (Adjusted R Squared = .402)

To assure that the samples for which pretest and posttest scores were available had been equated on pretest stanine scores, an independent pretest matching was conducted for subjects with complete pretest and posttest PPVT data. Fifty-five subjects were available for matching (equivalent stanines). This matching resulted in nonsignificant differences between groups based on pretest scores (BLL = 85.95, comparison = 86.51,  $t = -.251$ ,  $p = .802$ ). The posttest means for BLL subjects was 87.11 and was 83.47 for comparison subjects. Repeated measures ANOVA yielded a significant time by condition interaction (Wilks' Lambda = .961,  $p = .040$ ) but a non-significant time effect ( $p = .355$ ).

	TREATCON	Mean	Std. Deviation	N
PPVT Standard Score Fall 2002	BLL	85.95	11.672	55
	Comparison	86.51	11.857	55
	Total	86.23	11.714	110
PPVT Standard Score Spring 2003	BLL	87.11	12.498	55
	Comparison	83.47	13.551	55
	Total	85.29	13.103	110

The results of these analyses are consistent with the non-equated analyses, which indicated statistically significant greater gains for subjects in BLL classrooms. Findings based on pretest matching tend to discount regression to the mean as a significant threat to the internal validity of the study findings.



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