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Early Literacy and Learning Model (ELLM): Describing ELLM and Measuring Its Effectiveness

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Introduction

Through the *No Child Left Behind Act* the federal government has focused attention on reading instruction in kindergarten through third grade. At the same time, funding such as the *Preschool Curriculum Evaluation Research and Early Reading First* grants have extended the focus to preschool curricula, with special emphasis on emergent literacy. Furthermore, researchers are connecting theories about the acquisition of reading and emergent literacy skills and experiences. The emergent literacy model embodies the acquisition of knowledge and skills on a developmental continuum that takes place in formal and family settings. The model provides a picture of the acquisition of literacy that occurs from early childhood rather than beginning at kindergarten, and further suggests that literacy skills develop concurrently and interdependently.

The Early Literacy and Learning Model (ELLM) Curriculum and Instructional Support System

Changes in the workplace have brought increased attention to children's preschool care and education, with particular attention focused on early literacy and the importance of learning to read and read well. At the same time, we now know that many children, especially those from low-income families, arrive at school having had very little exposure to the language and literacy experiences needed to become successful readers. Closing this gap is essential if we are to realize President Bush's goal of every child being able to read on grade level by the third grade. The *Early Literacy and Learning Model (ELLM)* provides strategies for addressing this issue and has produced positive results.

The History of ELLM

ELLM was developed between 1994 and 1997 through a collaborative effort involving the University of North Florida (the College of Education and Human Services and the Florida Institute of Education) and the Duval County Public Schools. Initially, ELLM sought to improve the education and professional development of urban elementary teachers as a means of improving the performance of the high-needs elementary schools in which they served. Early in the program's development, however, it became clear that to improve the achievement of children from low-income families, it was critical to increase the quality and quantity of early literacy experiences children received before entering school. As a result, ELLM was expanded for use in childcare centers.

The ELLM Program

ELLM is a research- and standards-based literacy curriculum and instructional support system designed to improve the literacy achievement of preschool and kindergarten children from low-income families. ELLM consists of five elements: an early literacy curriculum; ongoing, job-embedded professional development delivered by trained literacy coaches; the use of assessment results to improve instruction, curriculum, and professional

development; family involvement; and practitioner/researcher partnerships.

The ELLM Curriculum

The ELLM curriculum consists of the learning materials and strategies classroom teachers use for at least one hour each day to provide emergent literacy experiences and help children acquire emergent literacy skills. Experiences include oral language, listening, and vocabulary development activities that engage children in conversations and encourage them to use oral language to express themselves effectively; reading aloud and emergent comprehension activities that provide opportunities for listening to stories, discussing the story meaning, and making connections between the stories and their own lives; and independent reading activities that give students positive experiences with books. Literacy skills include letter and sound knowledge (the ability to recognize the upper- and lowercase letters of the alphabet and their sounds); phonological awareness and phonics connection (the ability to recognize and isolate sounds and manipulate, blend, segment, and rhyme words); and print concepts and emergent writing (the ability to understand that reading and writing are interactive and an ability to express themselves in writing). ELLM uses the theorized interdependence of the emergent literacy components in instruction, a literacy-rich environment, and intentional teaching to maximize children's learning. The ELLM curriculum also includes a family involvement component designed to strengthen the link between the program and the home and increase families' involvement in their children's learning.

The ELLM Instructional Support System

There is a growing consensus about the importance of quality teaching and its link to improved children's achievement, especially for children from low-income families. Essential to improving the quality of teaching is strengthening the professional development and support provided to teachers. High-quality professional development focuses on children's academic needs and achievement, is ongoing and embedded in the classroom context, and makes continuous learning a valued part of the workplace culture.

The ELLM instructional support system provides high-quality professional development using an explicit coaching design that builds individual and organizational capacities. A key element is literacy coaches who work with teachers in their classrooms for at least one hour every week. The coaching model includes a planning/assessing/reflecting cycle; in addition, literacy coaches model classroom implementation and provide feedback to teachers regarding their implementation. Coaches attend an intensive summer institute and participate in problem-solving seminars throughout the year. Classroom teachers attend a summer institute for new and returning teachers and after-hours teacher get-togethers throughout the year. These outside-the-classroom activities focus on improving child outcomes and sharing successful practices.

The Evaluation of ELLM

Evaluation has been a major part of ELLM since its inception in 1994. Researchers, agency partners, and coaches use the evaluation results to strengthen ELLM, provide immediate feedback to enhance instruction and assess its effectiveness. Over the past several years, two assessments, the Test of Early Reading Ability - Third Edition (TERA-3) and the Alphabet Letter Recognition Inventory (ALRI), emerged as constant instruments from year to year. The ALRI measures the children’s ability to recognize the 52 upper- and lowercase letters of the alphabet. The TERA-3 measures the children’s early literacy abilities. The following table shows the ELLM evaluation results over a 5 year period.

Table 1

Historic Profile of ELLM’s Measured Success

ELLM Effectiveness: TERA-3					
	2001/2002	2002/2003	2003/2004	2004/2005	2005/2006
Prekindergarten Children	n=250	n=739	n=719	n=1038	n=828
Reading Quotient Scores	Fall 86.9	Fall 88.4	Fall 87.8	Fall 87.7	Fall 84.2
	Spring 94.0	Spring 93.2	Spring 99.7	Spring 95.0	Spring 93.5
Effect Size	0.47	0.32	0.79	0.49	0.62
ELLM Effectiveness: ALRI					
Prekindergarten Children	n=245	n=1552	n=1174	n=1231	n=1353
	<i>Most</i> 64.3%	<i>Most</i> 77.3%	<i>Most</i> 82.4%	<i>Most</i> 84.1%	<i>Most</i> 82.5%

Number reflects only children assessed in both the fall and spring, not the total number of children served. *Most* represents recognizing at least 50% of the upper- and lowercase letters.

Detailed reports of the evaluation of ELLM may be found at the FIE website, FIE Reports and Publications (<http://www.unf.edu/dept/fie/current-pubs.html>)

Since the 2001/2002 academic year, the achievement gap between ELLM children and the TERA-3 normative population narrowed between 1/3 and 3/4 of a standard deviation over the academic year. Additionally, beginning in the 2003/2004 academic year, over 80% of preschool children recognized at least 26 of the 52 upper- and lowercase letters of the alphabet at the end of the year. Over the past 5 years, ELLM children have demonstrated significant gains, with differences large enough to attribute the improvement to participation in ELLM.

The Preschool Curriculum Evaluation Research (PCER) Study of ELLM

In the summer of 2002, the Florida Institute of Education at the University of North Florida was awarded a 4-year *Preschool Curriculum Evaluation Research* (PCER) grant. Part of the PCER project involves evaluating ELLM in an experimental design—a randomized design in which the achievement of ELLM preschool children is compared to a wait-list control sample of preschool children rather than the TERA-3 normative sample.

In Florida, three geographical locations representing differing degrees of urbanicity participated in the study. Low-performing elementary schools housing at least one early intervention preschool class were identified in each of the three locations and then the schools were randomly assigned to either ELLM or wait-list control. Additionally, two Head Start and two subsidized sites were randomly selected in the attendance boundary of each elementary school. One class from each site was randomly selected to participate. In all, forty-eight preschool classes serving children from low-income families in these locations were randomly assigned to either ELLM or wait-list control.

Participants

The sampled preschool classes included classes with 3-, 4-, and 5-year-old children and classes with only 4- and 5-year-old children. Within this structure, there were classes that included children who used English as a second language and children selected for special education. The ELLM literacy curriculum was used in combination with the existing comprehensive curricula.

The average age of the ELLM and wait-list control teachers was about 45 years. Sixty-three percent of the teachers were Black, but there were more White and Hispanic teachers among the wait-list control teachers. The typical teacher in both groups reported about 14 years' experience working with young children; however, most of the teachers in both groups had less than three and a half years' experience in their current position. Sixty-seven percent of the wait-list control teachers and about 40% of the ELLM teachers had at least an AA/AS degree. Overall, the wait-list control teachers had a higher level of educational

attainment than the ELLM teachers. Additionally, four teachers in each group had master’s degrees.

Attrition

Attrition occurred at both the site and child levels. One wait-list control and one ELLM class withdrew from participation. Additionally, there was child-level attrition in the 48 classes remaining in the study. However, there was no evidence to suggest the child-level attrition did not occur at random.

Measurement

Data were collected on the children’s ability to recognize the 52 upper- and lowercase letters of the alphabet (ALRD), and their early literacy abilities were measured by the Test of Early Reading Ability -Third Edition, Form A (TERA-3). Trained assessors collected responses from children in school settings in age-appropriate one-on-one sessions. The children’s responses were recorded on scannable forms and computer scored. Pretest data were collected during October and November 2002, and posttest data were collected during May 2003.

There were 465 children with both TERA-3 pretest and posttest scale scores. Seventy-one percent of these children were Black, 12% were White, 82% used English as their first language, and 50% were boys. Furthermore, the assessed children were at least four years old on September 1, 2002. This age cut-off made them eligible for public kindergarten during the 2003/2004 academic school year. The ages of the children were evenly distributed across the resulting 48- to 60- month spectrum. The following table reports the summary statistics of the TERA-3 scale scores of the 465 children with complete pre- and posttest data.

Summary Statistics of TERA-3 Scale Scores by ELLM and Wait-List Control

Table 2

TERA-3 Scale	Time	ELLM (222)		Wait-List Control (243)	
		Mean	St. Dev.	Mean	St. Dev.
Reading Quotient	Pretest	84.62	11.80	84.73	12.30
	Postest	91.81	13.93	88.76	13.22
Alphabet	Pretest	7.80	2.85	7.98	3.14
	Postest	9.92	3.48	9.29	3.53
Conventions of Print	Pretest	7.16	1.84	7.33	1.80
	Postest	7.72	2.45	7.48	2.19
Meaning	Pretest	7.86	2.38	7.57	2.45
	Postest	8.55	2.04	7.98	1.98

On all TERA-3 scales, the mean posttest scores of the ELLM children were higher than the wait-list control children’s mean scores.

Method of Analyses

The use of hierarchical linear modeling (HLM) is indicated because children experienced the ELLM instructional model together in classes rather than in one-on-one settings. HLM allows this shared learning to be modeled in data analyses. Child-level variables included in the analyses were the TERA-3 pretest standardized scale scores, the ALRI pretest scores, the child's age on September 1 of the academic school year, and gender. All continuous variables were grand-mean centered. Class-level variables included in the analyses were class status as ELLM or wait-list control, geographic area of the class, and educational attainment of the teacher (either having completed a bachelor's degree or not).

Results

The results of the HLM analyses are presented in the following table.

Table 3

HLM TERA-3 Results

TERA-3 Scale	Child Level	p-value	Class Level	p-value	Effect Size	ICC	Adjusted Means
Reading Quotient	Scale Pretest	<.0001	Status	.0037	0.25	.15	ELLM 92.79
	ALRI Pretest	<.0001	Area	.2623			
	Age	<.0001	Education	.1165			Control 89.01
	Gender	.0105					
Alphabet	Scale Pretest	.0065	Status	.0272	0.33	.15	ELLM 10.17
	ALRI Pretest	<.0001	Area	.2702			
	Age	.0186	Education	.2131			Control 9.19
	Gender	<.0001					
Conventions of Print	Scale Pretest*	<.0001	Status	.0598	0.13	.06	ELLM 7.99
	ALRI Pretest	<.0001	Area	.0432			
	Age	<.0001	Education	.0294			Control 7.60
	Gender	.0241					
Meaning	Scale Pretest*	<.0001	Status	.0051	0.19	.14	ELLM 8.70
	ALRI Pretest	<.0001	Area	.0267			
	Age	<.0001	Education	.4128			Control 8.12
	Gender	.1198					

Note: *Indicates the pretest slope is random.

The four child-level variables were statistically significant in all of the analyses except for the child's gender in the analysis of the Meaning scale. In all cases, older children scored at lower posttest levels than younger children, and where gender was significant, boys achieved at lower levels than girls. These findings were the same for ELLM and wait-list control children. At the class level, only status was statistically significant in all analyses.

The children's level of achievement measured by the TERA-3 Conventions of Print and Meaning scales was differential across geographical areas. Additionally, children taught by bachelor-degreed teachers achieved at higher levels on the Conventions of Print scale. This was true for both the ELLM and wait-list control children, but the level of achievement of the ELLM children remained higher than the wait-list control children after controlling for these two class-level variables.

The Effectiveness of ELLM

The analyses indicated ELLM was more effective than the traditional approaches in raising the emergent literacy achievement of the children. The children experiencing ELLM literacy curriculum and instructional support system achieved higher adjusted mean posttest levels of emergent literacy skills measured by all TERA-3 scales than the wait-list control children.

Especially significant were the differences in the TERA-3 Reading Quotient and Alphabet scale adjusted mean posttest scores, where the resulting effect sizes were $1/4$ and $1/3$ of a standard deviation, respectively. Additionally, the ALRI mean posttest score (not shown) indicated the typical ELLM child recognized between 33 and 34 upper- and lowercase letters.

These PCER complementary data results support the historic evaluations of ELLM where the ranking of the scores of ELLM children improved compared to the ranking of the TERA normative population over the academic year.

Note.

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