

# Impact of the Voyager Universal Literacy System<sup>®</sup> as Measured by PALS in Virginia

## Richmond Public Schools

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# EXECUTIVE SUMMARY

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## THE PROGRAM

The Voyager Universal Literacy System™ incorporates the five critical components of reading instruction (phonemic awareness, phonics, fluency, vocabulary, and comprehension) as defined in the *No Child Left Behind* Act. Systematic, explicit instruction addresses each of these components, using a structured sequence of skill development.

Voyager Universal Literacy is a comprehensive system that is comprised of the following components: in-school comprehensive reading curricula, progress monitoring system, extended-day and summer intervention, home study curriculum, implementation support, and initial and ongoing professional development. The curricula are built upon a detailed scope and sequence. Each day's learning builds upon the previous day's learning. Likewise, skills in each grade level build upon skills and strategies from the previous year.

## THE EVALUATION

Data for 864 first grade and kindergarten students from 13 schools were available for the evaluation. Nine schools used Voyager during the 2001–2002 school year and four used an alternative. Richmond school officials selected Voyager classrooms based upon need. Low-achieving and low-income schools were targeted. The four sites using programs other than Voyager are high-performing schools.

A two-group pretest/posttest design was used. Students were assessed using Phonological Awareness Literacy Screening (PALS). Pretests were administered in the fall of 2001; posttests were given in the spring of 2002. Richmond School officials provided PALS data used in evaluating program impact. PALS was developed by the Curry School of Education at the University of Virginia and is used throughout Virginia.\*

## THE FINDINGS

In Voyager classrooms, a minority of children began the year on grade level (21% in kindergarten and 29% in first grade). By year's end, however, the majority (70% in kindergarten and 68% in first grade) were at or above grade level as indicated by their performance on the Phonological Awareness Literacy Screening. There were no changes from fall to spring for children attending non-Voyager schools (87% in kindergarten and 79% in first grade).

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\*For more information, visit <http://curry.edschool.virginia.edu>

# OBJECTIVES OF THIS REPORT

This report presents findings from evaluation of the Voyager Universal Literacy System™ used in Richmond, Virginia, during the 2001–2002 school year. The evaluation questions are outlined below. The body of the report is organized around these questions.

## **What is the Phonological Awareness Literacy Screening (PALS) assessment?**

- What are the purposes of PALS?
- What attributes are evaluated and what methods are used to measure targeted attributes?

## **What is the program effect of the Voyager Universal Literacy System using PALS to estimate student progress?**

- What is the program effect of the Voyager Universal Literacy System at kindergarten?
- What is the program effect of the Voyager Universal Literacy System at first grade?

# EVALUATION Q&A

## What is the Phonological Awareness Literacy Screening (PALS) assessment?

- **What are the purposes of PALS?**

PALS is designed to identify students who are below grade-level expectations in important literacy fundamentals and are thus at risk for reading difficulties and delays (Invernizzi, Meier, Swank & Juel, 2002). PALS has demonstrated good reliability and validity and can be used as a measure of students' knowledge of and ability to use the English writing system (Invernizzi et al., 2002).

- **What attributes are evaluated and what methods are used to measure targeted attributes?**

PALS–K, used with kindergarten students, includes two primary domains: a phonological domain and a literacy skills domain. Each domain is comprised of several tasks, as outlined in the first table below (Table 1). Domains and tasks for PALS 1–3 are indicated in Table 2.

TABLE 1: Domains And Tasks For PALS–K	
DOMAIN	TASKS
Phonological Awareness	Rhyme Awareness
	Beginning Sound Awareness
Literacy	Alphabet Knowledge
	Letter Sounds
	Spelling
	Concept of Word
	Word Recognition in Isolation

SOURCE: PALS- K Technical Reference (Invernizzi, Meier, Swank & Juel, 2002)

Children complete the tasks in the fall and again in the spring. Classroom teachers administer the PALS to children individually, unless otherwise indicated (e.g., group rhyme awareness, group beginning sound awareness, spelling, et al.). The tasks are not timed. In PALS 1–3, students are “routed” according to their performance on Orthographic Knowledge tasks. The other domains can be used to better isolate a child’s reading weaknesses and identify his or her instructional needs. Kindergarten children are administered both domains and all tasks in PALS–K.

**TABLE 2: Domains And Tasks For PALS - Grades 1–3**

DOMAIN	TASKS
Orthographic Knowledge	Word Recognition Spelling Letter Sound (First Grade)
Oral Reading in Context	Oral Reading Accuracy Oral Reading Fluency Oral Reading Comprehension
Alphabetics	Alphabet Recognition Letter Sounds Concept of Word
Phonemic Awareness	Blending Sound to Letter

SOURCE: PALS 1–3 Technical Reference (Invernizzi, Meier, Swank & Juel, 2002)

**What is the program effect of the Voyager Universal Literacy System using PALS to estimate student progress?**

Program impact was evaluated by comparing the summed score benchmarks provided by PALS for the samples of Voyager and nonVoyager students. The range of possible raw scores varies from fall to spring and across grade level, so “difference scores” may be misleading. A better indicator of change may be the child’s status in relation to the PALS *cut score(s)*. A cut score represents the proficiency level expected for a given grade level and time of year. The cut score is not subject to variation in range and it may provide a more meaningful comparison of two groups that began the school year at very different average skill levels (i.e., the Voyager group began the year well behind the nonVoyager sample).

- **What is the program effect of the Voyager program at kindergarten?**

The kindergarten sample is summarized in Table 3. *N* is the number of cases with PALS data for both fall 2001 and spring 2002. Voyager was used in 9 schools; nonVoyager data were available from 4 schools. Voyager was implemented in Richmond’s lower-income, low-performing schools. The nonVoyager group was drawn from schools with histories of high performance.

TABLE 3: Kindergarten Sample by School		
GROUP	SCHOOL NAME	<i>N</i>
<b>NonVoyager</b>	Fisher Elementary	48
	Mary Munford Elementary	71
	Southampton Elementary	61
	William Fox Elementary	74
	Total	254
<b>Voyager</b>	Clark Springs Elementary	26
	Francis Elementary	25
	Maymont Elementary	11
	Norrell Elementary	15
	Oak Grove/Bellemeade Elementary	23
	Overby-Sheppard Elementary	30
	Patrick Henry Elementary	15
	Summer Hill/Ruffin Road Elementary	13
	Swansboro Elementary	20
Total	178	

In Voyager kindergarten classrooms, the average fall 2001 score on the summed score benchmark was 22.6 compared to 70.3 for students in nonVoyager classrooms (possible scores on the fall 2001 PALS range from 0–144). At year’s end, the average PALS score for Voyager children was 75.1, while nonVoyager students averaged 83.0 (possible scores on the spring 2002 PALS range 0–112).

TABLE 4: Summed Score Benchmarks - Kindergarten		
PROGRAM	FALL 2001	SPRING 2002
Voyager	22.6 (13.7)	75.1 (17.6)
NonVoyager	70.3 (28.6)	83.0 (11.5)
		(sd)

The cut score for the fall 2001 summed score benchmark is 30 (i.e., children scoring below 30 are identified as in need of intervention). At the Voyager schools in the fall of 2001, only 21% of kindergarten children met this standard (i.e., scored above 30 on the fall administration of the PALS), while 87% of children in nonVoyager kindergarten classrooms scored above 30. In the spring of 2002, 70% of Voyager children scored above 74, the cut score for the spring 2002 PALS. There was no change from fall to spring in nonVoyager classrooms; as in the fall, 87% of nonVoyagers met or exceeded the spring cut score.

TABLE 5: Percent “Passing” - Voyager and Comparison - Kindergarten				
PROGRAM	FALL 2001		SPRING 2002	
	%	<i>N</i>	%	<i>N</i>
Voyager	21%	38	70%	125
NonVoyager	87%	221	87%	221

**What is the program effect of the Voyager System for first grade?**

- The first grade sample is summarized in Table 6. *N* is the number of valid cases PALS data from both fall 2001 and spring 2002. First grade classrooms were in the same schools as participating kindergarten rooms.

TABLE 6: First Grade Sample by School		
GROUP	SCHOOL NAME	<i>N</i>
<b>NonVoyager</b>	Fisher Elementary	49
	Mary Munford Elementary	62
	Southampton Elementary	66
	William Fox Elementary	60
	Total	237
<b>Voyager</b>	Clark Springs Elementary	35
	Francis Elementary	32
	Maymont elementary	12
	Norrell Elementary	22
	Oak Grove/Bellemeade Elementary	29
	Overby-Sheppard Elementary	21
	Patrick Henry Elementary	14
	Summer Hill/Ruffin Road Elementary	15
	Swansboro Elementary	15
	Total	195

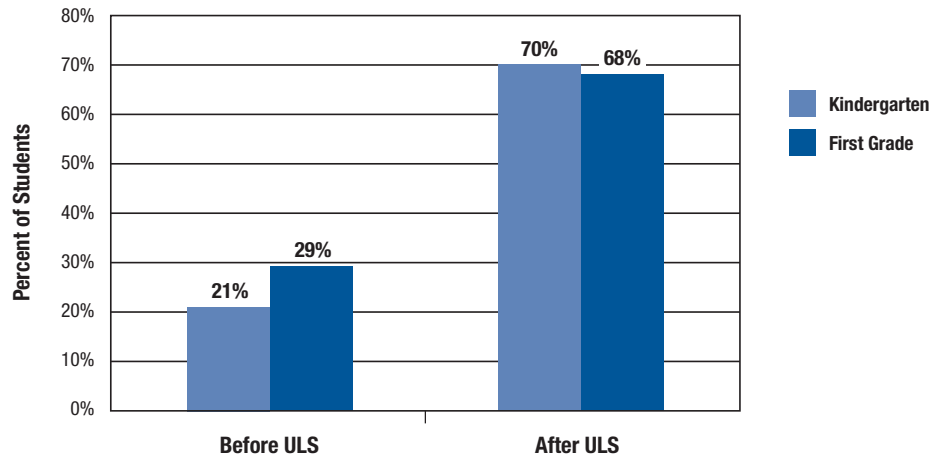
In Voyager first grade classrooms, the average fall 2001 score on the summed score benchmark was 31.6 compared to 53.5 for students in nonVoyager classrooms (possible scores on the fall 2001 PALS range from 0–90). At year’s end, the average PALS score for Voyager children was 38.0, while nonVoyager students averaged 46.5 (possible scores on the spring 2002 PALS range 0–68).

TABLE 7: Summed Score Benchmarks - First Grade				
PROGRAM	FALL 2001		SPRING 2002	
	Mean	(sd)	Mean	(sd)
Voyager	31.6	(13.0)	38.0	(15.6)
NonVoyager	53.5	(16.5)	46.5	(14.7)

The cut score for the fall 2001 summed score benchmark is 39 (i.e., children scoring below 39 are identified as in need of intervention). In the Voyager schools, in the fall of 2001, only 29% of first grade children met this standard (i.e., scored above 39), while 79% of children in nonVoyager first grade classrooms scored above 39. In the spring of 2002, 68% of Voyager children scored above 33, the cut score for the spring 2002 PALS. There was no change from fall to spring in nonVoyager classrooms; as in the fall, 79% met or surpassed the spring cut score.

TABLE 8: Percent "Passing" - Voyager and Comparison - First Grade				
PROGRAM	FALL 2001		SPRING 2002	
	%	<i>N</i>	%	<i>N</i>
Voyager	29%	56	68%	133
NonVoyager	79%	188	79%	186

## Kindergarten and First Grade Students Percent Passing



Posttest means for the Voyager and comparison groups were compared using analysis of covariance using the pretest number-correct score as the covariate. In kindergarten, the adjusted posttest mean for Voyager students was 82.4 (unadjusted mean of 75.1) and 78 for comparison classrooms (unadjusted mean of 83), while in first grade classrooms, the adjusted posttest means were 44.6 (unadjusted of 38) for Voyager students and 40.4 (unadjusted of 46.5) for comparison classrooms. The differences in adjusted posttest means for Voyager classrooms were significantly greater than the adjusted posttest means for comparison classrooms. In both kindergarten and first grade data (kindergarten -  $F=63.9$ ,  $p<.001$ ; total  $R^2=.24$  & first grade -  $F=136.6$ ,  $p<.001$ ; total  $R^2=.41$ ), Voyager students outperformed their counterparts in comparison classrooms, with a medium-sized effect ( $\eta_p^2 = .13$ ) for first grade and small-sized effect in the kindergarten data ( $\eta_p^2 = .03$ ).<sup>1</sup> An important assumption of ANCOVA is that the relationship of the covariate (pretest scores in this case) and dependent variable (posttest scores) do not differ across groups (i.e., the regression line of the dependent variable on the covariate has the same slope in all of the groups). A common test of this equal slopes assumption (i.e.,) is to regress the dependent variable on the covariate, the indicator of group membership, and the term representing the interaction of group membership and the covariate. In the kindergarten data, the model with interaction term was significant ( $F=44.95$ ,  $p<.001$ ), and the regression coefficient for the interaction term (standardized value of .18) was statistically significant ( $t=2.37$ ,  $p=.018$ ).

<sup>1</sup> Partial eta-squared,  $\eta_p^2$ , represents the proportion of variance attributable to a factor and its related error variance.

ANCOVA does not control for differences in systematic sources of variation that may have been unmeasured or not included as covariates. Given the large differences in pretest scores and the known variation between treatment and comparison schools, systematic differences are more than likely, and results of the ANCOVA should be considered with this in mind. Still, the results suggest that the Voyager students outperformed students in the comparison classrooms when pretest status was adjusted, a finding that supports the earlier result and extends it in that ANCOVA provides an estimate of effect. The effect size values ( $\eta_p^2$ ) suggest an evident effect for the Voyager program at kindergarten and first grade, with the first grade estimate being the more reliable of the two.

# SUMMARY & RECOMMENDATIONS

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The PALS data provided by Richmond School officials for this evaluation suggest that the Voyager program had a considerable impact on important early literacy skills of kindergarten and first grade students attending traditionally low-performing/low-income schools.

- Children in traditionally high- to average-performing schools who were on level to read at the beginning of the year were on level at year's end as well. The percent of on-level students at these schools was the same in the spring of 2002 as in the fall of 2001 for both the kindergarten and the first grade data (87% in kindergarten and 79% in first grade).
- In Voyager classrooms, a minority of children began the year on grade level (21% in kindergarten and 29% in first grade). By year's end, however, the majority (70% in kindergarten and 68% in first grade) were above the PALS cut score, indicating that they were "on target" for becoming successful readers.
- The gap between the reading skills of kindergarten and first grade students attending low income schools and same-aged students attending high to average schools in this sample was narrowed significantly over the course of the 2001–2002 school year. This result (i.e., the narrowing gap between classrooms in traditionally low-income

and low-performing schools using Voyager and classrooms in traditionally high- to average-achieving/income schools not using Voyager) can be explained in several ways, and these alternatives are considered in some detail in a technical report available from Evaluation Research Services or from Voyager Expanded Learning. The most compelling explanation is that Voyager had an impact on the early literacy skills of children in this sample. Children attending Voyager classrooms made large gains that they would probably not have made if Voyager had not been a part of their school experience.

- Richmond school officials are encouraged to follow the 2001–2002 kindergarten cohort (currently in first grade) and compare progress at the end of first grade with the progress of first graders attending traditionally high- and average-performing schools. The continued progress of students in the Voyager Universal Literacy System™ will be of interest to Richmond officials and administrators, as well as reading researchers and scholars.