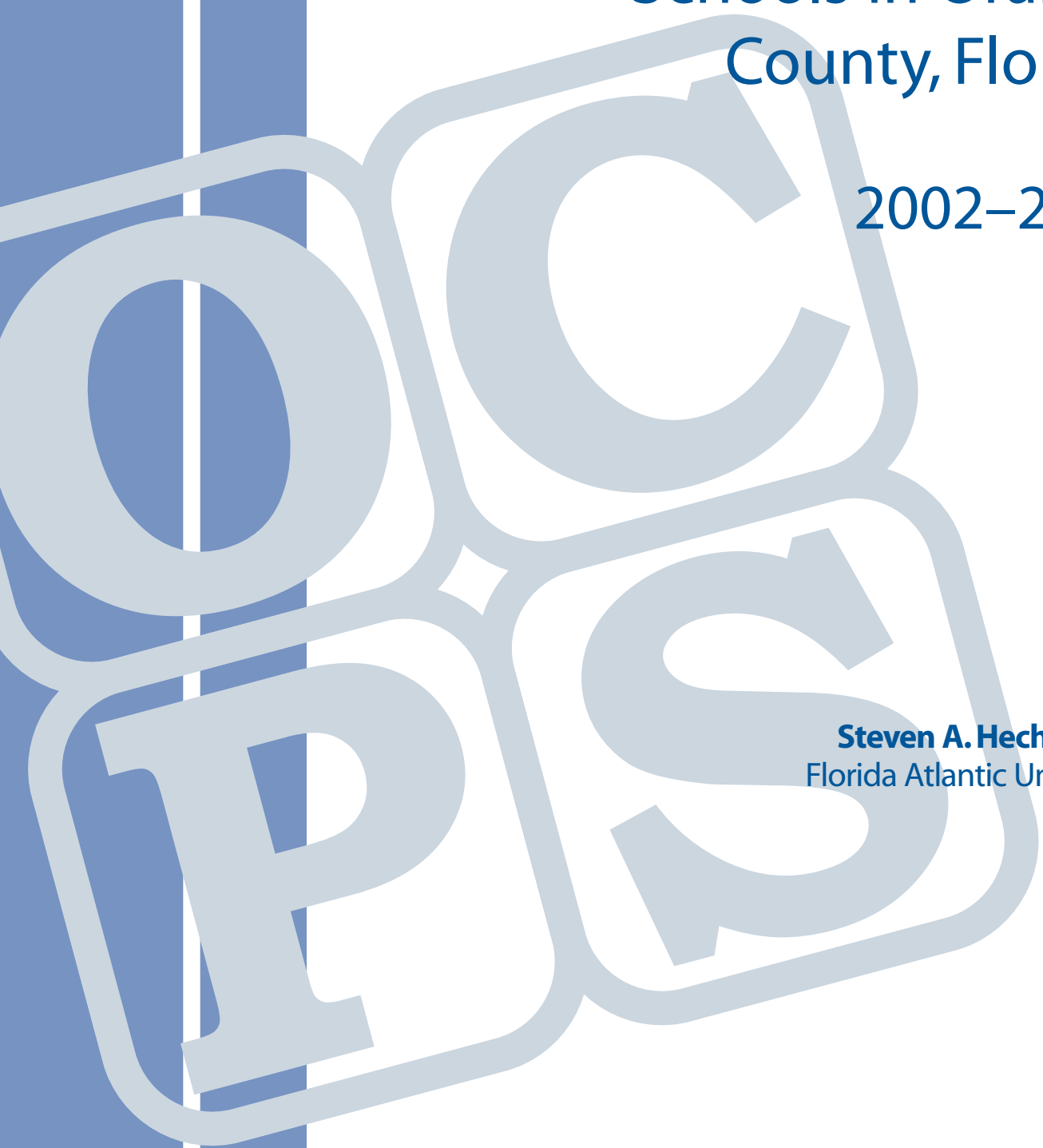


DECEMBER 2003

A Study Between
Voyager and Control
Schools in Orange
County, Florida

2002–2003

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Orlando, Florida 2002–2003

ABSTRACT

This report summarizes the second evaluation, directed by Dr. Steve Hecht, of the Universal Literacy System in Orange County, Florida. Economically disadvantaged kindergarten children were evaluated during the 2002-2003 school year. The effectiveness of an approximately 5-month period of use of the Voyager University Literacy System in two schools was compared to control classrooms from two other schools. Student progress was measured with reading-related tests administered to children by both impartial testers and Orange County Public Schools staff. Also, classroom related behaviors were assessed via both observational data and a teacher rating scale. Nationally standardized tests indicated that, in general, both groups of children approached or surpassed normal levels of performance at posttest. Voyager children were statistically superior on untimed measures of letter name and sound knowledge and phonemic segmentation ability. The Voyager program fostered growth in reading related skills consistently across the current and the prior evaluative study conducted during the 2001-2002 school year. Voyager children generally outperformed control children on the timed DIBELS measures administered by Orange County Public Schools staff. This is an important finding because it suggests that Voyager children were able to access knowledge about letters and the sounds that letters make in words and phonemic awareness skills at a faster rate than control children. Rapid access to reading related knowledge is necessary for acquiring proficiency in both fluent access to words and comprehension processes during reading. The efficacy of the Voyager program was also suggested from converging evidence that on-task related classroom behavior was more prevalent in Voyager classrooms than controls. Specifically, participants were rated more on-task by Voyager teachers than control teachers. Significant differences in favor of the Voyager group also occurred with respect to observer ratings of specific literacy-related behaviors by both the teacher and students in the classroom.

Evaluation Questions

The purpose of this report was to answer four related questions concerning the efficacy of the Voyager Universal Literacy System. These questions were:

1. **Did group differences emerge in posttest performance on untimed tasks administered by impartial testers?** These untimed tasks measured student's current state of reading related knowledge and skills, and included nationally standardized tests.
2. **Did the Voyager Universal Literacy System consistently improve reading related skills in two cohorts of kindergartners in Orange County, FL?** It was determined whether or not the current cohort of Voyager children showed gains that were comparable to the improvements in reading related skills made by Voyagers in the previous evaluative study conducted in Orange County, FL during the 2001-2002 school year.
3. **Did group differences emerge on measures of classroom reading-related behaviors by both children and teachers?** These measures reflect the amount of on-task behavior that took place in the classrooms during one observation conducted during reading instruction.
4. **Did group differences emerge on timed tasks obtained by Orange County Public Schools Staff?** These untimed measures assessed the rate that children were able to access reading related knowledge.

METHOD

Participants

All children attended schools that served economically disadvantaged children. 429 children initially participated in this evaluation. Sample attrition from pretest to posttest was 73 children (32 controls and 41 Voyagers). These 73 children were removed, thus leaving 356 children for subsequent analyses. Children in the between school design numbered 101 Voyagers from two schools and 112 controls enrolled in another two schools. Three schools participated in a within school design study, wherein some teachers were assigned to provide Voyager instruction and other classrooms in the same schools served as controls. The within school design data was discarded because treatment fidelity was likely very poor for most children who were assigned to the Voyager group. Specifically, based on feedback from Voyager staff and teachers, there is low confidence that acceptable fidelity of implementation of the Universal Literacy Program occurred in two of the three within school design schools. The sample sizes from the remaining within school design school were too small to detect significant differences between the groups (i.e., low statistical power). For these reasons, the within school design data were discarded from further analysis.

Available demographic characteristics of the children are reported in Table 1. The values in Table 1 represent the frequency of children with each characteristic. Instructional program reportedly used by the control teachers was Houghton Mifflin or Success For All. Characteristics concerning the teachers are as follows. The mean years teaching at OCPS was 7.1 for Voyager teachers and 12 for control teachers. All Voyager teachers were certified, and all but 2 control teachers were certified. There were no consistent correlations between these teacher characteristics and children's performance on the reading-related tests.

Table 1.

Demographic Characteristics of Children (Values Represent Frequency of Children with Given Characteristic)

	Control	Voyagers
1. Gender		
Girls	62	50
Boys	50	52
2. Race		
White	6	5
African American	101	81
Hispanic	5	6
Other	0	10
3. Limited English Proficiency		
Yes	16	10
No	83	71
Data not available	13	21
4. Eligible for free or reduced lunch		
Yes	85	71
No	2	2
Did not apply	12	8
Data not available	13	21
5. Receives special education services		
Yes	5	6
No	107	96

Note: Unless noted, values for control and Voyager groups together based on 214 participants.

Measures Administered by Impartial Testers (i.e., Dr. Tim Blair's graduate and undergraduate students)

1. **Word Identification.** This subtest, from the Woodcock Reading Mastery Test (Woodcock, 1987), requires children to name individually presented words of which there were 106.
2. **Word Analysis.** This subtest, also from the Woodcock Reading Mastery Test (Woodcock, 1987), required children to name individually presented nonwords of which there were 45.
3. **Spelling.** This was the Spelling subtest from the Wide Range Achievement Test (Wilkinson, 1995). This test requires students to write 13 letters and spell 15 words including their first name. The total number correct on both the letter writing portion and the spelling of words portions was recorded separately.
4. **Letter Name Knowledge.** Children named the 26 letters of the alphabet.
5. **Letter Sound Knowledge.** Children indicated the sounds that individual letters make in words. The highest possible score on this subtest was 38 correct.
6. **Print Concepts.** This was the Stones - Concepts About Print Test (Clay, 1979). The task has 24 items that measure children's knowledge about print. The 24 items are embedded in a children's story book about a stone rolling down a hill that the child and examiner jointly read.
7. **Phonological Awareness – Elision.** This task was the Elision subtest from the Comprehensive Test of Phonological Awareness (CTOPP; Wagner, Torgesen, & Rashotte, 2000). Children were asked to say a word, then say what the word would be if a specified phoneme in the word were deleted. For example, children were instructed to "Say the word cup. Now tell me what word would be left if I said cup without saying /k/." All phonemes to be deleted were consonants, the position of which varied at random. The remaining phonemes formed a word. There was a total of 20 items.
8. **Phonological Awareness – Segmenting.** This task was the Segmenting subtest from the CTOPP. Children listened to words and were instructed to "Tell me each sound you hear in the word in the order that you hear it." There was a total of 20 items.
9. **Phonological Awareness – Blending.** This is the most direct measure of children's skill in combining phonological elements to form a word. Phonemes are presented separately by the test giver, and the child is required to blend them together and identify the word they make when pronounced together. There was a total of 20 items.
10. **Expressive Vocabulary.** This was the vocabulary subtest of the Stanford-Binet: Fourth Edition (Thorndike, Hagen, & Sattler, 1986). Children uttered the definition of words. The vocabulary subtest is used by reading researchers as an estimate of general verbal IQ since it is the most highly correlated subtest with overall verbal IQ (Sattler, 1988). The first 36 items were used in the present evaluation.
11. **DIBELS Nonsense Word Fluency.** Children were presented a student stimulus sheet with nonwords arranged in rows. Participants were instructed to read the nonwords. Children were given one minute to read the words. This subtest was administered and scored in accordance with the directions provided in the DIBELS scoring booklet (Good & Kaminski, 2002, revised 7/3/02 version).

Measures Administered by Orange County Staff as Part of a District-Wide Census of DIBELS Performance (last two waves of data available)

12. **Initial Sound Fluency (ISF).** Students were shown a card with four pictures. Students were told the names of the pictures. Next, they were asked to point to the picture that begins with the specified first sound. For example, students were asked: “Which picture begins with /z/?” Accuracy was recorded. This measure was administered at census time point 1.
13. **Phoneme Segmentation Fluency (PSF).** Students were told, for example: “I will say a word. After I say it, you tell me all the sounds in the word. If I say man, you would say /m/ /a/ /n/.” Accuracy was recorded. This measure was administered at census time points 1 & 2.
14. **Nonsense Word Fluency (NWF).** The student is presented an 8.5” x 11” sheet of paper with randomly ordered VC and CVC nonsense words (e.g., sig, rav, ov) and asked to produce verbally the individual letter sound of each letter or verbally produce, or read, the whole nonsense word. For example, if the stimulus word is “vaj” the student could say /v/ /a/ /j/ or say the word /vaj/ to obtain a total of three letter-sounds correct. The student is allowed 1 minute to produce as many letter-sounds as he/she can, and the final score is the number of letter-sounds produced correctly in one minute. This measure was administered at census time points 1 & 2.
15. **Letter Naming Fluency (LNF).** Students were shown a card with an letters presented in rows. The letters were in random order and written in both upper and lower-case. Students were told: “Here are some letters. (tester pointed to the student probe.) Tell me the names of as many letters as you can. When I say ‘begin,’ start here (tester pointed to the first letter), and go across the page. Point to each letter and tell me the name of that letter. If you come to a letter you don’t know, I’ll tell it to you. Put your finger on the first letter. Ready? Begin.” Accuracy was recorded. This measure was administered at census time point 2.

PROCEDURE

Measures administered by impartial assessors. Tasks were administered at both pretest and posttest phases, except for the DIBELS Nonsense Word Fluency test which was given at posttest only. Administration of the pretest measures to both control and treatment (i.e., Voyager) children began on November 4, 2002, and ended December 3rd. Post-testing began April 23rd, 2003 and ended May 6th. All testing activities were primarily supervised by Dr. Timothy Blair, Professor, Department of Teaching and Learning Principles, College of Education, University of Central Florida. Tasks were administered in random order. Testing was done by graduate and undergraduate students enrolled in Dr. Blair's College.

Measures administered by classroom teachers. Both Voyager and control teachers filled out a brief questionnaire that assessed student's frequency of prosocial (e.g., on-task) classroom behaviors. This was the academic competence subscale of the Social Skills Rating System (Gresham & Elliott, 1990). This instrument evaluates each child's academic and learning behaviors as compared with those of other children in the same classroom. For each of the 10 items, the child's level of functioning is rated either: 1 (in the bottom 10% of the class), 2 (in the next 20% of the class), 3 (in the middle 40% of the class), 4 (in the upper 20% of the class), or 5 (in the top 10% of the class).

Measures administered by Orange County Public School Staff. Orange County Public Schools administered selected DIBELS tasks at least twice during children's kindergarten year. The first available DIBELS census assessment was administered during January and early February 2003. Children received between approximately one to two months of Voyager instruction prior to the first DIBELS census assessment. The second available census assessment was administered during April and early May 2003. The first census assessment involved the following DIBELS fluency tasks: letter names, initial sounds, phoneme segmentation, and nonsense word reading. The second census assessment involved these fluency tasks: letter names, phoneme segmentation, and nonsense word reading.

Classroom Observations. Students trained by Tim Blair observed one reading lesson conducted by participating teachers. These observations occurred during mid-March to April, 2003. The observational measures were:

1. **Implementation Fidelity Instrument (IFI).** This measure was developed by Greg Roberts, former versions called QUAC, and involved ratings ranging from low to high implementation. Ratings are included pertaining to implementing the Voyager core curriculum, student engagement, and data to make decisions on a 4-point scale. This measure was only used with Voyager children.
2. **General Teacher Behavior Scale (GTBS).** This measure was developed by Steve Hecht, and involves ratings on a 5-point scale ranging from rarely to most of the time. Ratings are included pertaining to how often teachers engage in behaviors that are considered to be conducive to teaching reading (e.g., monitor on-going student performance, communicate effectively to students, provide positive feedback to students, etc).
3. **General Student Behaviors Scale (GSBS).** This measure was adapted from Dr. Sharon Vaughn's Classroom Climate Scale by Steve Hecht. The observational instrument involves ratings on a 5-point scale ranging from rarely to most of the time. Ratings are included pertaining to how often children are engaged in behaviors that are considered to be conducive to learning how to read (e.g., being on-task, interact constructively with other students, etc).

4. **Specific Literacy Behaviors Scale (SLBS).** This measure was adapted from Ellco’s Literacy Activities Rating Scale by Steve Hecht. This observational instrument involves ratings of literacy related events (e.g., adult reading to child) and opportunities (evidence of a location set aside for reading books) that are considered conducive to learning how to read. The SLBS is composed of items with different scales of measurement. Thus, the z-scores of the items were summed to form the SLBS measure.

RESULTS

Voyager and control children were compared with respect to posttest levels of performance on tasks administered at the end of the school year by impartial testers and Orange County Public Schools staff, observational data, and teacher ratings of student behavior in the classroom.

Results Section 1. Did group differences emerge in posttest performance on untimed tasks administered by impartial testers?

These tasks provide an estimate of student's state (i.e., amount) of reading related knowledge and skills at the time of measurement, and do not necessarily reflect student's rate of access to these funds of ability. Analysis of covariance was employed to test group differences in performance, with pretested ability specified as a covariate, except for nonsense word fluency which was only administered at posttest. Table 2 shows pre and posttest raw scores and gain scores. The results indicated significant Voyager advantages in posttest levels of raw phoneme segmentation and both letter name and letter sound knowledge. Table 3 depicts post-test performance on the nationally standardized tests expressed as age-based standard scores. Effect sizes (Cohen's standardized mean differences, d) are also presented, which should be interpreted as the difference in group means expressed in standard deviation units. Effect sizes of .80 or higher suggest large effects, .50 to .79 suggest medium sized effects, and .20 to .49 reflects relatively small effects (Cohen, 1988). In general, posttest levels of age-based standardized scores revealed that both control and Voyager children attained average levels of performance when compared to a nationally representative standardization sample. One notable exception was that the effect size for phonemic segmentation was medium in size, suggesting a meaningful advantage for Voyagers over controls with respect to this important phonemic awareness outcome.

Table 2.

Average Raw Pre- and Post-test Performance, Separated by Group, for the Two Voyager Schools (n = 101) and the Two Control Schools (n = 112)

	Control			Voyagers		
	Pretest	Posttest	Gain	Pretest	Posttest	Gain
1. Word Identification	1.0	9.8	8.8	1.7	9.9	8.2
2. Word Analysis	0.7	4.8	4.1	0.7	5.3	4.6
3. Spelling — Letters	11.1	13.3	2.2	11.4	13.1	1.7
4. Spelling — Words	0.5	2.7	2.2	0.6	2.5	1.9
5. Letter Name Knowledge	21.0	25.1	4.1	21.3	26.2*	4.9
6. Letter Sound Knowledge	17.8	24.0	6.2	16.4	25.7***	9.3**
7. Print Concepts	9.1	13.2	4.1+	9.9	13.0	3.1
8. Phonological Awareness — Elision	1.7	3.7	2.0	1.9	3.3	1.4
9. Phonological Awareness — Segmenting	0.5	4.3	3.8	1.4*	7.5***	6.1***
10. Phonological Awareness — Blending	3.8	9.0	5.2	4.4	10.0	5.6
11. S-B Vocabulary	13.8	16.9***	3.1***	14.2	14.4	0.2
12. Nonsense Word Fluency	----	30.6	----	----	29.3	----

Note: Significance value for posttest denotes that that group scored significantly higher than the other group at posttest. A significant effect for gain indicates that that group showed greater improvements in performance over the pre- to post-test time period than the other group.

+ (p < .10), * (p < .05), ** (p < .01), *** (p < .001)

Table 3.

Average Age-Based Standard Scores at Posttest, Separated by Group, for the Two Voyager Schools (n = 101) and the Two Control Schools (n = 112)

	Control	Voyager	d
1. Word Identification	103.4	104.5	.09
2. Word Analysis	106.0	107.6	.15
3. Spelling	102.5	102.0	.03
4. Phonological Awareness — Elision	8.4	8.1	.02
5. Phonological Awareness — Segmenting	9.9	12.1***	.59
6. Phonological Awareness — Blending	11.4	11.8	.11
7. S-B Vocabulary	49.5***	44.7	.51

Note: Significance value denotes that that group scored significantly higher than the other group. Subtest standard scores for the phonological awareness, reading, spelling, and vocabulary measures are scaled to have a mean of 10, 100, 100, and 50, respectively. *d* stands for the difference in group means expressed in standard deviation units.

* (p < .05), ** (p < .01), *** (p < .001)

Results Section 2. Did the Voyager Universal Literacy System consistently improve reading related skills in two cohorts of kindergartners in Orange County, FL?

Most of the tasks administered by impartial testers were given during both the 2001-2002 cohort and the current 2002-2003 school year cohort. This allowed comparisons to be made between cohorts concerning how well the Voyager Universal Literacy Program fostered reading related skills attainment. If Voyager children’s responses to instruction were comparable between cohorts, this would provide direct evidence that the Voyager Universal Literacy System provides consistently effective instruction for kindergarten children.

Table 4 depicts mean gain scores (i.e., posttest performance minus pretested ability) for both cohorts. The mean gain scores were submitted to an analysis of variance to determine if significant differences in these values emerged between cohorts. The current cohort of Voyager children made improvements in reading related skills that were either comparable or exceeded levels of growth obtained by the 2001-2002 cohort on 9 of the 11 reading related skills that were assessed. Only two measures, phonemic elision and vocabulary, revealed significantly greater gains in the prior cohort than the current group of children exposed to Voyager instruction. In sum, these raw effect sizes (i.e., gains) generally indicate that the Voyager Universal Literacy System fostered children’s reading related skills acquisition consistently across studies.

The standardized effect sizes, *d*, reported in Table 4 also indicate that improvements made by children were, in general, comparable between groups. If gain scores are comparable between groups, then effect sizes reflecting differences in gain scores between cohorts should be small. The magnitude of the *d*'s were indeed small, with only three exceptions. Two of these exceptions actually reflected greater gains made by the current cohort of children than the previous cohort with respect to word identification and spelling words. The age based standard scores on these two measures were clearly within the average range in the previous cohort. Thus, while both cohorts of children made at least age-appropriate gains on these two outcomes, the current group of Voyagers showed stronger improvements than the previous cohort. In conclusion, the standardized effect sizes provide a similar picture as the gain scores in terms of showing that both cohorts of Voyagers consistently made substantial improvements in reading related skills.

Table 4.

Average Gain Scores for the 2001–2002 Voyager Cohort (n = 58) and the 2002–2003 Voyager Cohort (n = 101)

	2001–2002	2002–2003	<i>d</i>
1. Word Identification	4.4	8.2***	.58
2. Word Analysis	4.6	4.6	.01
3. Spelling — Letters	1.3	1.7	.13
4. Spelling — Words	.80	1.9***	.84
5. Letter Name Knowledge	2.8	4.9*	.37
6. Letter Sound Knowledge	6.5	9.3*	.36
7. Print Concepts	3.1	3.1	.00
8. Phonological Awareness — Elision	2.6*	1.4	.38
9. Phonological Awareness — Segmenting	5.3	6.1	.17
10. Phonological Awareness — Blending	4.8	5.6	.21
11. S-B Vocabulary	2.9*	0.2	.76

Note: A significant effect for gain indicates that that cohort showed greater improvements in performance over the pre- to post-test time period than the other Voyager cohort. *d* stands for the difference between cohorts in mean gain scores, expressed in standard deviation units.

+ (p < .10), * (p < .05), ** (p < .01), *** (p < .001)

Results Section 3. Did group differences emerge on measures of classroom reading-related behaviors?

Children’s tendency to engage in academic and learning behaviors in the classroom was measured via a teacher questionnaire. Measures of student behaviors were also obtained via one classroom observation during reading instruction. The raters recorded whether both general behaviors (e.g., asked peer for help, was on task) and specific behaviors (e.g., child provided instruction in phonemic awareness) were observed. Also, teacher’s general classroom behaviors were measured with respect to her interactions with students (e.g., provided positive praise, monitored student behavior, etc). Interrater reliability for the observational measures were near perfect. Table 5 shows the results separated by group. Larger values are indicative of more on-task related behaviors observed in the classroom. Voyager teachers considered their students to display on-task related behaviors more frequently than control teachers did. Consistent with teacher perceptions, the independent observers found that more frequent specific reading-related behaviors occurred in Voyager classrooms than control classrooms.

Table 5.

Mean Levels of On-Task Related Behaviors Observed in the Classroom, Separated by Group (control n = 97, Voyager n = 80).

	Control	Voyager	d
1. Teacher Ratings of Student Behaviors	22.6	25.2***	.54
2. Observer Ratings of Specific Literacy Behaviors	-.72	6.5***	.73
3. Observer Ratings of General Student Behaviors	9.1	8.8	.10
4. Observer Ratings of General Teacher Behaviors	7.5	8.3	.16

Note: d stands for the difference in group means expressed in standard deviation units.

+ (p < .10), * (p < .05), ** (p < .01), *** (p < .001)

Results Section 4. Did group differences emerge on tasks obtained by Orange County Public Schools Staff?

Tasks reported here were timed, and were designed to measure student’s rate of access to reading related knowledge and skills. Two census administrations of DIBELS tasks were administered in Orange County in the Spring of kindergarten. These two administrations will be referred to as time1 and time2 administrations. This data was available for 97 controls and 80 Voyagers. Table 6 shows the mean levels of total correct performance on all time1 and time2 DIBELS census measures, separated by group. Evidence for Voyager advantages emerged on two of the three DIBELS tasks administered at the time2 administration, while controlling for time1 administration (i.e., nonsense word and phoneme segmentation fluency). Evidence was also obtained for marginally significant (p < .10) Voyager advantages for letter naming fluency at both time points. In sum, the census DIBELS results consistently point to Voyager advantages with respect to the speed that reading related knowledge can be accessed by the participants.

Table 6.

Mean Levels of DIBELS Performance from the Orange County Census Data, Separated by Group (control n = 97, Voyager n = 80).

	Control			Voyagers		
	Time1	Time2	Gain	Time1	Time2	Gain
1. Letter Naming	34.5	41.8	7.3	38.4 ⁺	45.8 ¹	7.4
2. Nonsense Word	17.5	23.4	5.9	20.9 ²	34.9 ^{***}	14.0 ^{***}
3. Initial Sound	12.7	----	----	21.6 ^{***}	----	----
4. Phoneme Segmentation	16.5	20.3	3.8	26.1 ^{***}	47.2 ^{***}	21.1 ^{***}

Note: Voyager advantages for time2 levels of phoneme segmentation and nonsense word fluency emerged while controlling for time1 levels of performance. A significant effect for gain indicates that that group showed greater improvements in performance over the time1 to time2 period than the other group.

+ (p < .10), * (p < .05), ** (p < .01), *** (p < .001)

¹ Time2 Letter Naming fluency group difference marginally significant (p < .10) when time1 performance not statistically controlled for.

² Only 39 cases available for Nonsense Word Fluency for Voyagers.

DISCUSSION

This evaluation focused on four related questions concerning the efficacy of the Voyager Universal Literacy Program in Orange County, FL during the 2002-2003 school year. Regarding the first question, group differences emerged on three of the 12 untimed tasks administered by impartial testers. That is, Voyager children showed a statistically significant advantage over controls on letter name and sound knowledge and phoneme segmentation ability. The first evaluation in Orange County, FL (2001-2002 school year) also revealed superior performance for Voyagers on a measure of letter knowledge and phonemic segmentation when compared to a control group. The answer to the second question provided evidence that the Voyager Universal Literacy System consistently fostered substantially improved reading related skills across two cohorts of children. That is, both gain scores and standardized effect sizes revealed that children in both the current and the 2001-2002 cohorts made substantial improvements in reading related skills. Thus, findings from the current evaluation provide an important replication of the effects of Voyager instruction reported in the previous evaluative study conducted in Orange County, Florida.

The answers to both the third and fourth evaluation questions provide generally consistent results in favor of superior efficacy for the Voyager Program over the control reading approaches. Evidence was obtained that reading related behaviors were more prevalent in the Voyager classrooms than the control classrooms. Voyager teachers perceived their students to engage in on-task behaviors more often than the control teachers reported. The classroom observation data also supports this conclusion, because observers reported more reading-related on-task interactions occurring in the Voyager classrooms than the control classrooms. The answer to the fourth question suggests that children in the Voyager group appear to have been more effectively taught how to rapidly access existing reading related knowledge than control children. That is, evidence pointing to more fluent access to letter knowledge, including identification of sounds in words, and phonemic awareness for Voyagers than controls was found on all DIBELS measures administered by Orange County Public Schools staff. Thus, the results support the assertion that the Voyager Program more effectively teaches fluency of access to reading related knowledge than the other reading programs used by control teachers.

In conclusion, the current evaluative study provides evidence that the Voyager Universal Literacy System 1) consistently fosters substantial growth in reading related skills in kindergarten children, 2) enhances the frequency of reading related classroom behaviors, and 3) enhances children's rate of access to reading related knowledge. Regarding future studies, the generality of the current results to differences in student language background and exposure durations to the Voyager Universal Literacy System should be undertaken. The efficacy of the Voyager program with respect to fostering growth in reading related skills in limited English proficient children would be extremely beneficial. Future research should also examine the unique and joint effects of Voyager Universal Literacy Program and summer school program on the acquisition rate of reading related skills.

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