

Improved Reading Skills by Students in the Exceptional Student Education Program in the Osceola County School District who used Fast ForWord® Language

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ABSTRACT

Purpose: This study investigated the effects of the Fast ForWord Language software on the reading skills of students. The students were receiving special education services and used the product within the curriculum in a school setting. **Study Design:** The design of the study was a single school case study using state achievement test data. Dependent t-tests and analysis of variance procedures were used to evaluate changes in student test performance. **Subjects:** Study participants were 38 third to fifth graders, in the Exceptional Student Education (ESE) program at Hickory Tree Elementary School in the Osceola County School District of Saint Cloud, Florida. **Materials & Implementation:** Following staff training on the Fast ForWord products, Hickory Tree Elementary School students used the Fast ForWord Language product for an average of 32 days over an average period of 59 calendar days. Before and after Fast ForWord Language participation, student performance was evaluated by examining annual progress on the reading portion of the Florida Comprehensive Assessment Test (FCAT). A dependent t-test was used to compare how the study participants performed before and after using the Fast ForWord Language product. Their year-to-year gains are discussed relative to the statewide performance of students on the FCAT. **Results:** On average, the students in the ESE program who were using the Fast ForWord Language product made significant improvements in reading skills as measured by the FCAT. Between 2002 and 2003, they attained a mean improvement in reading achievement scale score of 25 points. Driving this improvement were the 63% of the students who increased their scale score. Across all students statewide, the mean improvement was 10 points.

Keywords: Florida, elementary school, suburban district, observational study, special education, Title I, Fast ForWord Language, Florida Comprehension Assessment Test (FCAT).

INTRODUCTION

Early laboratory tests of a prototype of a computer-based product combined an optimal learning environment with a focus on early reading and cognitive skills. The results were dramatic improvements in the auditory processing and language skills of elementary school children who had specific language impairments (Merzenich et al., 1996; Tallal et al., 1996) or were at-risk for academic failure (Miller et al., 1999). The Osceola County School District was interested in evaluating the effectiveness of this approach for improving their curriculum and instruction for students in the district's Exceptional Student Education (ESE) program, as measured by state achievement scores. In this study, a commercially available computer-based product (Fast ForWord Language) was used to evaluate the effectiveness of this approach in improving the academic achievement of students in the ESE program.

METHODS

Participants

During the 2002 – 2003 school year, 112 students at Hickory Tree Elementary School, in

Saint Cloud, Florida, were selected by teachers and school administrators to use the Fast ForWord Language product. Thirty-eight of those students were in the school's Exceptional Student Education (ESE) program and participated in a study involving an analysis of their scores from the state test for reading achievement (administered before and after they used the Fast ForWord Language product). The students in the study group were all reading below grade level and receiving services as part of the school's ESE program. Most of these students were 4th graders, but the group also included one retained 3rd grader and two 5th graders. Seven of the students in the study group had been retained the previous year. The other 74 students who used Fast ForWord software were excluded from the study because they were not in the ESE program.

Implementation

Educators at Hickory Tree Elementary School were trained in current and established findings on the neuroscience of how phonemic awareness and the acoustic properties of speech impact rapid development of language and reading

skills; the scientific background validating the efficacy of the products; methods for assessment of potential product participants; the selection of appropriate measures for testing and evaluation; effective implementation techniques; approaches for using Progress Tracker reports to monitor student performance; and techniques for measuring the gains students have achieved after they have finished using the product.

Materials

Fast ForWord Language, a computer-based product combining an optimal learning environment with a focus on early reading and cognitive skills, was used in conjunction with the school curriculum. The product includes seven exercises designed to build skills that are critical for reading and learning, such as auditory processing, memory, attention, and language comprehension.

Circus Sequence: Students hear a series of short, non-verbal tones. Each tone represents a different fragment of the frequency spectrum used in spoken language. Students are asked to differentiate between these tones. This exercise improves working memory, sound processing speed, and sequencing skills.

Old MacDonald's Flying Farm: Students use the computer mouse to catch and hold a flying animal. The animal repeats a single syllable several times, and students must release the animal when they hear a change in the syllable. This exercise improves auditory processing, develops phoneme discrimination, and increases sustained and focused attention.

Phoneme Identification: First, students listen as one animal character utters a phoneme, and then two new animals utter similar phonemes. Then the students identify which of the latter two sounds was identical to the first phoneme. This exercise improves auditory discrimination skills, increases sound processing speed, improves working memory, and helps students identify specific phonemes.

Phonic Match: Students choose a square on a grid and hear a sound or word. Each sound or word has a match somewhere within the grid. The goal is to find each square's match and clear the grid. This exercise develops auditory word recognition and phoneme discrimination, improves working memory, and improves rate of auditory processing.

Phonic Words: Students see two pictures representing two similar words that differ only by

initial or final consonant ("tack" versus "tag"). When students hear the word representing one of the pictures, they must click the picture that matches the word. This exercise increases sound processing speed, improves auditory recognition of phonemes and words, and helps students gain an understanding of word meaning.

Language Comprehension Builder: Students listen to a sentence that depicts action and complex relational themes. Students must match a picture representation with the sentence they just heard. This exercise develops oral language and listening comprehension, improves understanding of syntax and morphology, and improves rate of auditory processing.

Block Commander: In Block Commander, a three-dimensional board game is filled with familiar shapes that students select and manipulate. The students are asked to follow increasingly complex commands. This exercise increases listening comprehension and the ability to follow directions, improves syntax, develops working memory, and improves sound processing speed.

Assessments

In the spring of 2002 and spring of 2003 (before and after using the Fast ForWord Language product) students' reading skills were evaluated with the reading portion of the Florida Comprehensive Assessment Test (FCAT). School personnel administered the assessment, and reported the scores for analysis.

Florida Comprehensive Assessment Test (FCAT): The reading portion of the FCAT is designed to assess student achievement of the high-order cognitive skills represented in the Sunshine State Standards (SSS) for Reading. This is a criterion-referenced test. All students in Grades 3-10 take the FCAT in Reading and Mathematics in the spring of each year. The primary metric for reporting student performance on the FCAT is the Scale Score. FCAT Scale Scores are designed to remain roughly the same from year to year for the student who maintains steady progress, neither overtaking nor falling behind his or her peers.

Analysis

Scale Scores for all study students from spring 2002 and spring 2003 were compared using a dependent t-test. An analysis of variance (ANOVA) was also performed to contrast two subgroups: students who were repeating a grade at the time of study (n=7), and students who were not (n=31). Both analyses used a p-value of 0.05 as the criterion for identifying statistical significance.

RESULTS

Participation Level

Research conducted by Scientific Learning shows a relationship between product use and the benefits of

the product. Product use is composed of content completed, days of use, and adherence to the chosen protocol (participation level). The Fast ForWord Language protocol used at Hickory Tree Elementary School called for students to use the product for 100 minutes a day, five days a week, for four to eight weeks.

During the 2002 – 2003 school year, Hickory Tree Elementary School students used the Fast ForWord

Language product. On average, the students used the product for 32 days over a period of 59 calendar days, completing 62% of the product content, and achieving a participation level of 60% (Table 1). The average daily progress through the exercises for the first 30 days for all students is charted in Figure 1. (For students who used the product fewer than 30 days, percent complete is maintained at the level achieved on their final day of product use.)

Number of Students	Average Days of Product Use	Average Number of Calendar Days	Average Overall Percent Complete	Average Participation Level
112	32	59	62%	60%

Table 1. Usage data showing the number of students who used the Fast ForWord Language product. Also shown are the group averages for the number of days they used it, the calendar days between start and finish, the percentage of content they covered, and their participation level (the percentage of 100 minutes per day, five days per week, that the students actually used the Fast ForWord Language product).¹

Daily Progress in Fast ForWord Language for Osceola County Students¹

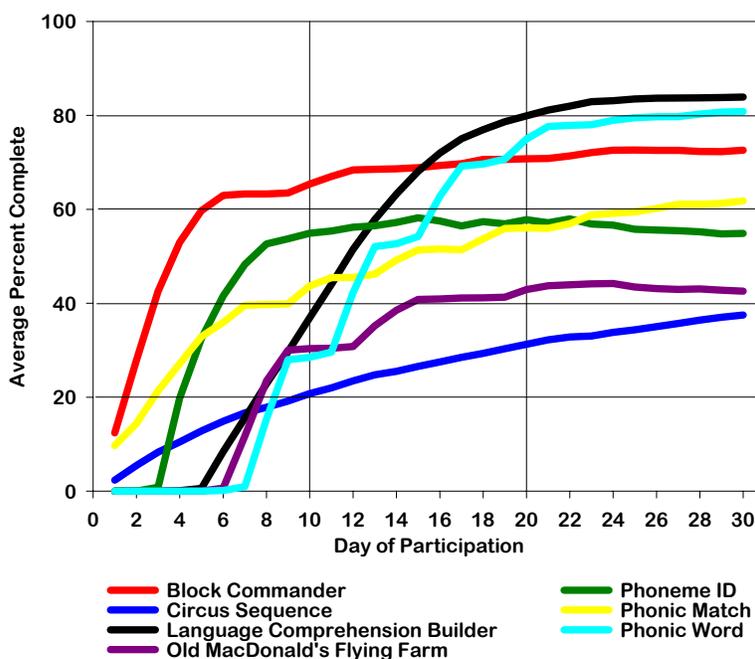


Figure 1. Average daily progress over the first 30 days of use for all Hickory Tree Elementary School students who used the Fast ForWord Language product in the 2002-2003 school year.¹

Assessment Results

Florida Comprehensive Assessment Test:

FCAT Scale Scores for reading were reported for all study students. Of the 38 students, 24 of them (63%) increased their scale score between 2002 and 2003. A dependent t-test showed that,

after using the Fast ForWord Language product, the students made statistically significant improvements (Table 2), with the group’s mean scale score increasing from 225 to 250. Figure 2 shows the mean gain of students in the study. A weighted calculation based on statewide scale

scores for students in the same grades as the students in the study, showed a statewide improvement of 10 points (from 294.3 to 304.0).

Because 7 of the 38 students in the study were repeating a grade (consequently repeating the same FCAT level), further analyses were done to determine whether the two groups responded differently. Nineteen of the 31 students (61%)

who were not repeating a grade had an improved scale score in 2003, while five of the seven (71%) who were repeating a grade had an improvement. A repeated-measures ANOVA, comparing students who had been retained in the spring of 2002 with those who had been promoted, indicated that improvements made by the two groups did not differ ($F(36) = 0.11$, ns.).

FCAT Reading	n	2002 (Before)		2003 (After)		t-value
		Mean	SE	Mean	SE	
Scale Score	38	225.0	9.2	250.0	9.1	-3.307*

Table 2. Overall, 38 elementary school students who used the Fast ForWord Language product made statistically significant gains in reading, as measured by the reading portion of the FCAT. * $p < 0.05$.

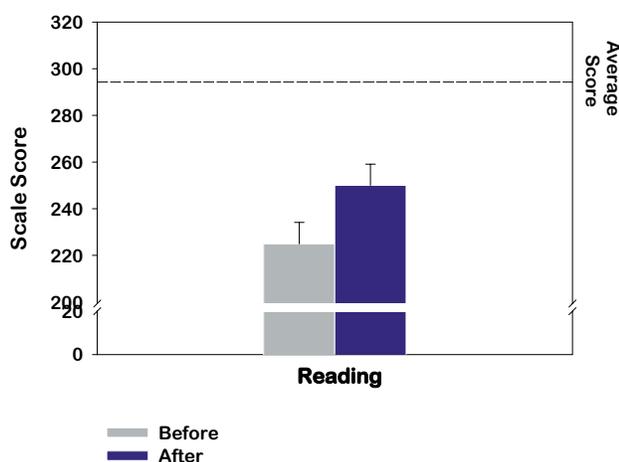


Figure 2. In this elementary school case study, the reading skills of 38 students were evaluated. At pre-test, the students were in third and fourth grade. The 2002 state average score, weighted by the number of study students in each grade, is shown (294.3). On average, these students who used the Fast ForWord Language product made significant improvements.

DISCUSSION

All of the Osceola County study participants had been receiving services through their school's Exceptional Student Education program, and seven of the 38 students had been retained a grade. However, between 2002 and 2003, after the students used the Fast ForWord Language product, their mean scale score improvement of 25 points on the FCAT reading assessment surpassed the 10-point statewide improvement. These findings, combined with the students' progress through the Fast ForWord Language product, demonstrate that, within the Osceola County School District, an optimal learning environment, coupled with a focus on cognitive and early reading skills, can help elementary school students in ESE programs attain a higher level of academic achievement.

CONCLUSION

The results found in this study support the original studies on improved language skills, and demonstrate that using the Fast ForWord Language product also results in the strengthening of foundational reading skills, better positioning students to partake in the classroom curriculum.

Notes:

1. Thirty-eight of these 112 students participated in the study. (Due to the nature of the data provided by Hickory Tree Elementary School, it was not possible to disaggregate the usage data of study participants from that of the larger group of Fast ForWord Language users.)
2. To cite this report: Scientific Learning Corporation. (2003). Improved Reading Skills by Students Receiving Special Education Services in the Osceola County School District, MAPS for Learning: Educator Reports, Vol. 7, No. 1: pp. 1-4.

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