Improved Reading Skills by Students in the El Campo Independent School District who used Fast ForWord® Products with a 30-Minute Protocol

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ABSTRACT

Purpose: This study investigated the effects of the Fast ForWord products on the reading skills of at-risk students who used the products within the curriculum in a school setting. **Study Design:** The design of this study was a single school case study using nationally normed tests. **Participants:** Study participants were second and third grade students who were attending Hutchins Elementary School in the El Campo Independent School District of El Campo, Texas. **Materials & Implementation:** Following staff training on the Fast ForWord products, a group of students used the 30-Minute Protocols of the Fast ForWord Language Basics and/or Fast ForWord to Reading Prep products during the 2004 – 2005 school year. Students were evaluated with the STAR Reading and the Reading Edge assessments before and after Fast ForWord use. **Results:** On average, students improved one-fifth of a standard deviation, corresponding to gains of three months in reading grade-level, and achieved significant improvements on measures of early reading and phonological skills after Fast ForWord participation.

Keywords: Texas, elementary school, rural district, observational study, at-risk, special education, Fast ForWord Language Basics, Fast ForWord to Reading Prep, STAR Reading, Reading Edge.

INTRODUCTION

Numerous research studies have shown that cognitive and oral language skills are under-developed in struggling readers, limiting their academic progress (Lyon, 1996). University-based research studies reported the development of a computer software product that focused on learning and cognitive skills, and provided an optimal learning environment for building the memory, attention, processing and sequencing skills critical for reading success (Merzenich et al., 1996; Tallal et al., 1996). This prototype of the Fast ForWord Language software showed that an optimal learning environment and focus on early reading and cognitive skills resulted in dramatic improvements in the auditory processing and language skills of school children who had specific language impairments (Merzenich et al, 1996; Tallal et al., 1996) or were experiencing academic reading failure (Miller et al., 1999). The El Campo Independent School District was interested in evaluating the effectiveness of an optimal learning environment with a focus on early reading and cognitive skills as a way for improving the reading achievement of students in a school setting. In this study, commercially available computer-based products (Fast ForWord Language Basics and Fast ForWord to Reading Prep) were used to evaluate the effectiveness of this approach, 30 minutes per day, for improving the reading achievement of elementary school students who were receiving special education services or were at-risk for academic failure.

METHODS

Participants

El Campo, Texas, is the largest city in Wharton County and is located approximately 70 miles southwest of Houston and 50 miles northeast of Victoria. The El Campo Independent School District is a pre-Kindergarten through twelfth grade district with five schools and a student population of more than 3,500. At the end of the 2004 – 2005 school year, Hutchins Elementary chose to use the Fast ForWord Language Basics and Fast ForWord to Reading Prep products and participate in this study. The school serves approximately 500 students in second and third grades. About 51% of students are Hispanic; 35% are Caucasian and 13% are African American. Approximately 71% are eligible for free or reduced price lunches.

The students in this study were a group of second and third grade students who used Fast ForWord Language Basics and Fast ForWord to Reading Prep products at the end of the 2004 – 2005 school year. Seventeen students had either STAR Reading or Reading Edge assessment scores available from before and after Fast ForWord participation and were included in this study. School personnel administered the assessments and reported scores for analysis. Seventy percent of the

participants were Hispanic and 17% were African-American. Students were receiving special education services, were English Language Learners, or were below reading level. Study participants had an average grade of 2.2.

Implementation
Educators were trained in current and established neuroscience findings on 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 candidates for participation; 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 Fast ForWord products.

Materials
The Fast ForWord products are computer-based products that combine an optimal learning environment with a focus on early reading and cognitive skills. The products used by the school, Fast ForWord Language Basics and Fast ForWord to Reading Prep, include three to six exercises designed to build skills critical for reading and learning, such as auditory processing, memory, attention, and language comprehension. While there are differences between the products, both help develop certain critical skills as detailed in the following exercise descriptions.

Inside the Tummy[1, 2]*:* Participants click and drag colored shapes into matching shape outlines in pre-defined patterns. This task helps participants improve fine motor skills, hand-eye coordination, and computer mousing skills.

Hungry Tummy[2]*:* Participants follow spoken directions to feed shapes of different colors and sizes to "Hungry Tummy" the bear. This task develops knowledge of basic colors (red, blue, green, yellow, and white), shapes (square, circle, and triangle) and relative size (big and small). Participants also develop their working memory, verbal decoding skills, and mousing skills as they practice following spoken instructions.

Flying Saucer[1]*:* Participants identify sounds presented in a sequence, then click on graphic icons associated with those sounds to reproduce the sequence. This task builds auditory discrimination ability, auditory working memory, and sequencing skills.

Drag Racer[1]*:* Participants point and click on a (sometimes moving) graphic, then hold the mouse button down to hear a stream of identical sounds. Participants release the mouse button when there is a sound change. This task is designed to improve auditory discrimination and sustained auditory attention. It also develops mousing skills, and the ability to withhold a response until an auditory cue is presented.

Packing Pig Goes to Work[2]*:* The name of a letter is presented aurally, and then that letter, along with up to four other letters, is displayed on the screen. The participant must click on the letter that was aurally presented. This task develops letter-name knowledge, auditory working memory, and visual-spatial memory abilities.

Packing Pig Has Lunch[2]*:* Participants match upper and lower case letter tiles in progressively larger grids. At the easiest levels, the tiles are face-up, with the letters visible throughout the trial. At the hardest levels the tiles are face-down, and letters are only briefly visible when clicked, so that it becomes a memory challenge. This task develops letter-name knowledge, association of upper and lower case letters, auditory working memory, and visual-spatial memory abilities.

Ghost Coaster[2]*:* The participant works to associate a set of consonant phonemes (speech sounds) with the letters that represent them. Each phoneme/letter pair is presented in several trials, along with examples of words that start with the phoneme. This task builds letter-sound association skills and understanding of the alphabetic principle in written English.

Houndini[2]*:* Participants listen to sets of words, and must select the odd-one-out based on either beginning sounds or ending sounds. This task improves phonological processing skills including phoneme analysis and phonological working memory.

Assessments
Students were evaluated with the STAR Reading or the Reading Edge assessments before and after Fast ForWord participation. School personnel administered the assessments and reported scores for analysis.

STAR Reading: The STAR Reading assessment is a criterion- and norm-referenced test of reading ability. It consists of computer

[1] Exercise from the Fast ForWord Basics product.
[2] Exercise from the Fast ForWord to Reading Prep product.

adaptive multiple choice questions and is appropriate for grades 1 through 12.

Reading Edge: Reading Edge is a software program for evaluating phonological/early reading skills, including phonological processing, phonological awareness, phonemic decoding, and letter-sound identification.
The Reading Edge composite score reflects a student's overall performance on the various phonological and reading tests in Reading Edge taking into account the relative importance of each test in predicting reading ability.

Second graders scoring above 50 are performing at the expected level for their grade. Second graders scoring at 30 or below are at risk for reading failure. Second graders scoring between 31 and 50 are borderline.

Analysis

STAR Reading scores were reported in terms of scale scores, normal curve equivalents and grade equivalents. Scores on Reading Edge were reported in terms of raw and composite scores. Data were analyzed using t-tests. All analyses used a p-value of less than 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). During the 2004 – 2005 school year, the El Campo Independent School District chose to use the 30-Minute Fast ForWord Language Basics and Fast ForWord to Reading Prep Protocols. These protocols call for students to use the products for 30 minutes a day, five days per week. Eleven of the seventeen students used both Fast ForWord products. Detailed product use is shown in Table 1.

	Number of Students	Days Participated	Number of Calendar Days	Percent Complete	Participation Level	Attendance
Fast ForWord Language Basics	14	6	10	91%	89%	83%
Fast ForWord to Reading Prep	14	12	19	71%	100%	82%

Table 1. Usage data showing the number of students who used each Fast ForWord product along with group averages for the number of days participated, the number of calendar days between start and finish, the percentage of product completed and the participation level, which is the degree to which a participant is meeting daily time requirements according to the chosen protocol (in this case, 30 minutes a day, five days per week for three to sixteen weeks), Attendance is calculated from the first day of use to the last day with the expectation that students are participating five days a week.

Assessment Results

STAR Reading: Scores were reported in terms of scale scores, normal curve equivalents and grade equivalents. Normal curve equivalents (NCE), which allow for comparisons across grades and are normed to the season of the test administration, are the most appropriate units for statistical analyses. Twelve students had STAR Reading scores available. Before Fast ForWord use, students had an average NCE of 22.4, which is in the below average range. After Fast ForWord participation, students improved one-fifth of a standard deviation in reading performance (Table 2). For descriptive purposes, these gains are shown in Figure 1 as grade-equivalents. The group of students had improvements of three months in the one and a half months between test dates.

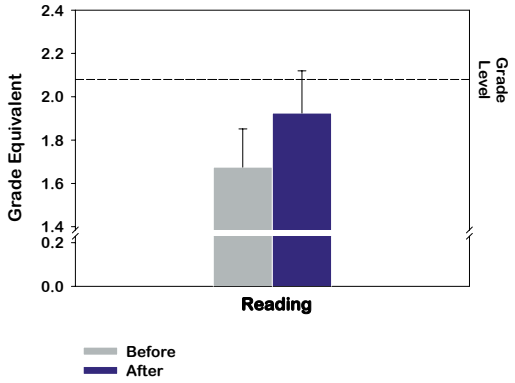

Figure 1. Students had average gains of three months in reading performance after Fast ForWord use. Results from 12 students are shown.

	n	Before		After		t-statistic
		Mean	SE	Mean	SE	
STAR	12	22.4	4.34	26.8	4.93	1.98
Reading Edge	17	18.7	5.14	30.4	7.96	2.70*

*Table 2. Students made improvements in their reading ability after using the Fast ForWord products. *p<0.05.*

Reading Edge: All 17 students in the study were assessed with Reading Edge before and after Fast ForWord participation. Scores were reported as raw scores and composite scores. Composite scores reflect a student's overall performance on Reading Edge and were analyzed using paired t-tests. On average,

students made significant improvements after Fast ForWord use, gaining 11 points and moving closer to their expected performance level (Table 2, Figure 2).

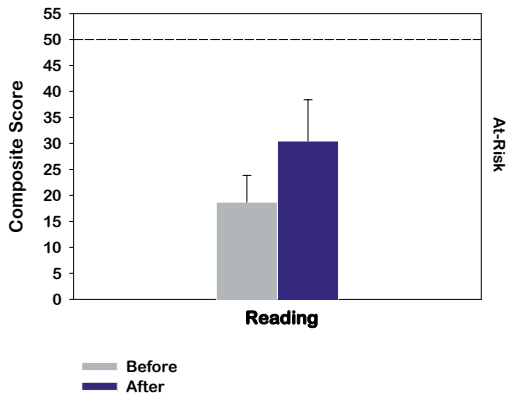

Figure 2. On average, students had significant improvements in overall reading and phonological measures after participating on the Fast ForWord products. Results from 17 students are shown.

DISCUSSION

Towards the end of the 2004 – 2005 school year, 17 students in second and third grade used the Fast ForWord products. On average, students made significant gains in measures of phonological awareness and reading abilities after Fast ForWord use. Students, on average, improved one-fifth of a standard deviation on the STAR Reading assessment, a gain corresponding to three months improvement. It is important to note that the norm referencing on the STAR is based on when the students' skills were assessed –it was expected that a student's skills would improve during the 1½ months between the pre- and post-assessments. The improvement achieved by the students was in addition to this expected improvement.

Taking the students' previous reading skills into account—these students had a grade equivalent reading level of 1.9 with many receiving special education services or at-risk for academic failure—gains of three months after just one month of Fast ForWord product use are remarkable. These findings demonstrate that, within Hutchins Elementary School, an optimal learning environment coupled with a focus on cognitive and early reading skills can help students attain a higher level of reading achievement, and that these improvements can be attained following a 30-Minute Protocol with the Fast ForWord Language Basics and/or Fast ForWord to Reading Prep products.

CONCLUSION

Language and reading skills are critical for all students, impacting their ability to benefit from instruction, follow directions, and participate in class discussions. Strong linguistic skills also provide a critical foundation for building reading and writing skills. After use of the 30-Minute Protocol on Fast ForWord Language Basics and/or the Fast ForWord to Reading Prep products, students in the El Campo Independent School District improved three months in reading grade-level and had significant improvements on measures of phonological and reading abilities. This suggests that using the 30-Minute Protocol with certain Fast ForWord products can strengthen students' foundational skills and help them benefit more from the classroom curriculum.

Notes:

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