

Improved Reading Skills by Students in the Oakland Unified School District who used Fast ForWord® Products

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ABSTRACT

Purpose: This study investigated the effects of the Fast ForWord products on the reading skills of 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 students in eighth through tenth grade who were attending Ralph Bunche Academy in the Oakland Unified School District in Oakland, CA. **Materials & Implementation:** Following staff training on the Fast ForWord products, a group of students used the products during the 2004-2005 school year. Student reading ability was evaluated with the STAR Reading assessment before and after Fast ForWord product use. **Results:** After Fast ForWord participation, students, on average, improved their reading performance by almost one-fifth of a standard deviation, a gain of over nine months in grade level; students identified by teachers as having made an effort on the products improved an average of 15 months.

Keywords: California, opportunity school, urban district, observational study, Fast ForWord Middle & High School, Fast ForWord Language to Reading, STAR Reading.

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 Oakland Unified 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 skills of low-performing inner city students in a school setting. In this study, commercially available computer-based products (Fast ForWord Middle & High School and Fast ForWord Language to Reading) were used to evaluate the effectiveness of this approach for improving the reading ability of struggling readers.

METHODS

Participants

Located in the eastern section of the San Francisco Bay Area and founded in 1852, Oakland, California is

a city with much more history than its 150 years. Native Americans lived in the area for thousands of years and Spanish explorers visited and settled in the 1700's and 1800's. During the Gold Rush, Oakland was a mainstay for passengers and cargo traveling between the Bay and the Sierra foothills.

The Oakland Unified School District is a Kindergarten through twelfth grade district with 110 schools and over 52,000 students. Approximately 33% of the student population are English language learners and 11% have Individualized Education Plans (IEP).

Ralph Bunche Academy is a sixth through tenth grade opportunity school serving approximately 200 students. About 64% of the student population is African American, 7% is Asian American and 26% is Hispanic. An estimated 18% are English language learners and 72% receive free or reduced price lunches.

The students included in this study were in eighth through tenth grade (average grade of 9.4) and were low-performing and struggling readers. Before and after Fast ForWord product use, student reading ability was evaluated with the STAR Reading assessment. School personnel administered the assessments and reported scores for analysis.

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 Middle & High School and Fast ForWord Language to Reading products are computer-based products that combine an optimal learning environment with a focus on early reading and cognitive skills. The products include five 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.

Sweeps¹, and Trog Walkers²: 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. The exercises improve working memory, sound processing speed, and sequencing skills.

Streams¹: Students hear a single syllable that is repeated several times, and then interrupted by a different syllable. Students must respond when they hear the change in the syllable. This exercise improves auditory processing, develops phoneme discrimination, and increases sustained and focused attention.

IDs¹, Polar Cop², and Treasure in the Tomb²: Students hear a target phoneme, and then must identify the identical phoneme when it is presented later. These exercises improve auditory discrimination skills, increase sound processing speed, improve working memory, and help students identify a specific phoneme. *Polar Cop* also develops sound-letter correspondence skills. *Treasure in the Tomb* also develops grapheme recognition.

Matches¹, and Bug Out²: 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. The *Matches* exercise develops auditory word recognition and phoneme discrimination, improves working memory, and increases sound processing speed. The *Bug Out!* exercise develops skill with sound-letter correspondences as well as working memory.

Cards¹: Students see two pictures representing words that differ only by the initial or final consonant (e.g., "face" versus "vase", or "tack" versus "tag"). When students hear one of the words, 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.

Stories¹ and Start-Up Stories²: Students follow increasingly complex commands, match pictures to sentences, and answer multiple-choice questions about stories that are presented aurally.

Assessments

The STAR Reading assessment was used to evaluate student reading ability. Students were tested before and after Fast ForWord participation. The time between pre and post assessments was approximately five months. At post-testing, a few students were still using Fast ForWord products although almost all had finished participating in the Fast ForWord Middle & High School product.

STAR Reading: The STAR Reading assessment is a criterion- and norm-referenced test of reading ability. It consists of computer adaptive multiple choice questions and is appropriate for grades 1 through 12.

Analysis

Scores were reported in terms of normal curve equivalents (NCEs) and grade equivalents. NCEs were analyzed using paired t-tests. All analyses used a p-value of less than 0.05 as the criterion for determining 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 and attendance level). During the 2004 – 2005 school year, the Oakland Unified School District chose to use the 48-Minute Fast ForWord Middle & High School Protocol and the 50-Minute Fast ForWord Language to Reading Protocol. All students in this study used the Fast ForWord Middle & High School product first; about

¹ Exercise from the Fast ForWord Middle & High School product.

² Exercise from the Fast ForWord Language to Reading product.

half continued use with the Fast ForWord Language to Reading product. Detailed product use is shown in Table 1.

Figures 1 and 2 show the average daily progress through the Fast ForWord Middle & High School and Fast ForWord Language to Reading product exercises

for students who had STAR Reading scores available for analysis. The final day shown is determined by the maximum number of days that at least two-thirds of the students participated. For students who used the product fewer than the number of days shown, percent complete is maintained at the level achieved on their final day of product use.

	Number of Students	Days Participated	Number of Calendar Days	Percent Complete	Participation Level	Attendance Level
Fast ForWord Middle & High School	20	29	89	63%	83%	43%
Fast ForWord Language to Reading	9	10	31	23%	87%	44%

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, the participation level and the attendance level.

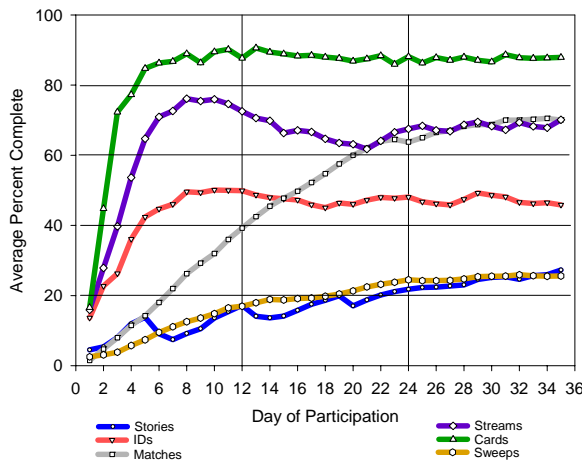


Figure 1. Average daily progress through the Fast ForWord Middle & High School product exercises. Results from 20 students are shown.

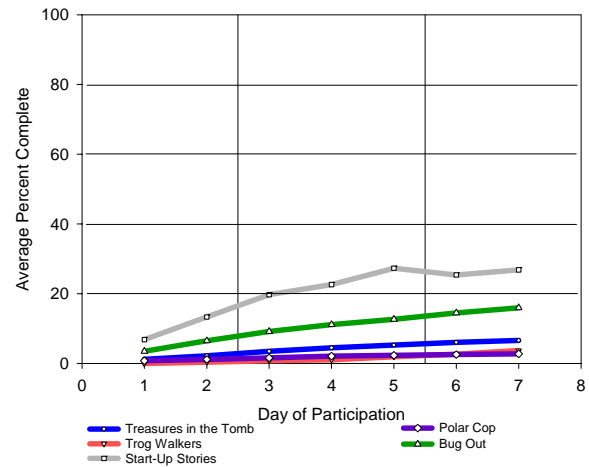


Figure 2. Average daily progress through the Fast ForWord Language to Reading product exercises. Results from 9 students are shown.

Assessment Results

STAR Reading: Scores from the STAR Reading were reported as grade equivalents and normal curve equivalents (NCEs). NCEs, which allow for comparisons across grades and are normed to the season of the test administration, are the most appropriate units for statistical analyses. Before Fast ForWord participation, students had an average NCE score of 18.7 which is below the average range. Approximately five months later, following product use, students made gains of almost one-fifth of a standard deviation, an improvement corresponding to nine and one-half months in reading grade level (Table 2).

	n	Before		After		t-statistic
		Mean	SE	Mean	SE	
STAR	20	18.7	2.84	22.9	4.02	2.02

Table 2. On average, student reading ability improved after Fast ForWord participation.

Many of the students had challenges with attendance and attitude. School personnel were specifically interested in the effectiveness of the products on students who appeared to make an effort. They identified just over half of the students as having worked vigorously on the Fast ForWord products. These students completed an average of 71% of the Fast ForWord Middle & High School product over 36 days.

A separate analysis was performed using NCE scores from this group of students. Students made significant gains in reading ability after Fast ForWord participation, with improvements of one-third of a standard deviation (Table 3). Figure 3 shows these gains in terms of grade equivalents. On average, in the five months between STAR Reading administrations, students improved fifteen months in reading grade level.

	n	Before		After		t-statistic
		Mean	SE	Mean	SE	
STAR	11	19.4	4.31	26.5	6.38	2.74*

Table 3. Students who used Fast ForWord products vigorously made significant gains in reading ability after participation, * $p < 0.05$.

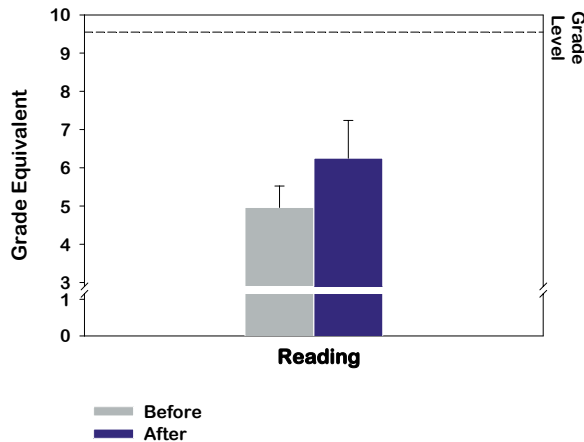


Figure 3. On average, students who used the Fast ForWord products improved 15 months in reading grade level. Results from 11 students are shown.

DISCUSSION

During the 2004 – 2005 school year, low-performing eighth through tenth grade students in the Oakland Unified School District used the Fast ForWord products. On average, students improved their reading skills after Fast ForWord use, with students who were identified as working vigorously on the Fast ForWord products improving fifteen months in reading grade level. These findings demonstrate that, within Ralph Bunche Academy, an optimal learning environment coupled with a focus on cognitive and early reading skills can help students attain a higher level of reading achievement. These findings also indicate that student attitude and attendance influence benefit and support earlier findings that there is a relationship between product use and benefit.

CONCLUSION

Language and reading skills are critical for all students, impacting their ability to benefit from

instruction, follow instructions, and participate in class discussions. Strong linguistic skills also provide a critical foundation for building reading and writing skills. After Fast ForWord use, students in the Oakland Unified School District made gains in their reading skills and improved by an average of nine and a half months in grade level. For students who teachers identified as having “worked hard” on the Fast ForWord products, improvements were 15 months in reading grade level after five months of product use. These gains are incredible considering students were reading nearly five years below their grade level before Fast ForWord participation. This suggests that using the Fast ForWord products strengthened the students’ foundational skills and helped them benefit more from the classroom curriculum.

Notes:

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