

Improved Language and Reading Achievement by Students in the Lamar County 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 elementary and middle school students who used the products within the curriculum in a school setting. **Study Design:** The design of this study was a multiple school case study using state assessments. **Participants:** Study participants were third through eighth grade students who were attending schools in the Lamar County School District of Purvis, Mississippi. **Materials & Implementation:** Following staff training on the Fast ForWord products, a group of students used the products during the 2005-2006 school year. Student language and reading achievement were assessed with the Mississippi Curriculum Test (MCT) before and after Fast ForWord participation. **Results:** On average, students significantly improved their performance on the reading and language subtests of the MCT following Fast ForWord participation. Overall, the group met state proficiency standards on the reading subtest and approached it on the language subtest.

Keywords: Mississippi, public, elementary, middle, suburban, observational study, Fast ForWord Middle & High School, Fast ForWord Language to Reading, Fast ForWord to Reading 4, Mississippi Curriculum Test (MCT).

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 Lamar County 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 to improve the reading and language achievement of students in a school setting. In this study, commercially available computer-based products (Fast ForWord Middle & High School, Fast

ForWord Language to Reading, and Fast ForWord to Reading 4) were used to evaluate the effectiveness of this approach for improving the academic achievement of elementary and middle school students.

METHODS

Participants

Purvis is the county seat of Lamar County, Mississippi. The city is located in the southwestern part of the state and is 90 miles northeast of New Orleans, Louisiana. The Lamar County School District has 13 schools and approximately 7,500 students in grades pre-Kindergarten through twelve. An estimated 79% of the students are Caucasian and 18% are African-American. About 16% have Individualized Education Plans (IEP). Four schools in the District, Baxterville, Oak Grove Middle, Purvis Middle, and Sumrall Middle & High, took part in the study reported here. With the exception of Oak Grove Middle, the schools are Title I schools.

A group of 65 students in third through eighth grade used the Fast ForWord products during the 2005-2006 school year. Student reading and language achievement were evaluated with the Mississippi Curriculum Test (MCT) before and after participation in the Fast ForWord products. School personnel

administered the assessment 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 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 Lamar County School District, Fast ForWord Middle & High School, Fast ForWord Language to Reading, and Fast ForWord to Reading 4, 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 variations across products related to the specific skills targeted and the approaches taken, there are several critical skills developed in all of the products, 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.

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

² Exercise from the Fast ForWord Language to Reading product.

IDs¹, Polar Cop², and Treasure in the Tomb²: Students hear a target syllable or word, and then must identify the identical syllable or word when it is presented later. These exercises improve auditory discrimination skills, increase sound processing speed, improve working memory, and help students identify a specific sound. *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.

Book Monkeys: Book Two³: Participants read narrative and expository passages and answer comprehension questions about each passage. The multiple-choice questions demand that the participant use memory for literal detail, generation of inferences, or grasp of among four alternatives. This task develops paragraph comprehension, inferential and cause-and-effect reasoning, working memory, flexible reading, and vocabulary.

Lulu's Laundry Line³: In *Lulu's Laundry Line*, short passages are presented with occasional gaps where punctuation is missing. These exercises develop paragraph comprehension, complex morphology, flexible reading, and vocabulary, as well as automaticity for decoding and sentence comprehension.

Hoof Beat³: The participant is presented with a question and four possible answers. The participant must choose the most appropriate answer. The

³ Exercise from the Fast ForWord to Reading 4 product.

questions relate to semantics, phonology, morphology, orthography, and syntax. The exercise encourages flexibility during reading and automatic access to the various dimensions of vocabulary and is designed to build vocabulary by showing the participant how words function.

*Jitterbug Jukebox*³: The participant hears a word spoken aloud and letters appear on the keys of a jukebox. The participant must spell the word by clicking on the jukebox keys. Jitterbug Jukebox helps participants improve spelling and sensitivity to letter-sound correspondences. This exercise includes many of the 500 most commonly used words in written English including most word families found in 3rd and 4th grade content standards.

*Goat Quotes*³: In Goat Quotes four newspapers paraphrase a headline at the top of a news kiosk. The participant must select the correct paraphrase. The exercise is designed to sample the basic syntactic (i.e., grammatical) structures of spoken English generally mastered in the early elementary grades. The exercise develops logical thinking and working memory skills as well as careful reading.

*Stinky Bill's Billboard*³: Participants must select the word that accurately completes a sentence. In this exercise, participants improve sentence comprehension while practicing the decoding of words in realistic contexts. This exercise also helps build vocabulary and awareness of word structure.

Assessments

Students were assessed with the Mississippi Curriculum Test (MCT) before and after Fast ForWord product use. Pre-testing occurred in May of 2005. Post-tests were administered after Fast ForWord participation in May of 2006.

Mississippi Curriculum Test (MCT): The Mississippi Curriculum Test measures a student's proficiency in the state standards for reading, language and mathematics. The Reading portion of the test measures semantic and syntactic knowledge, along with phonetic structure, vocabulary, and comprehension. The Language component focuses on editing, spelling, sentence structure and semantics.

Analysis

Scores were reported in terms of scale scores, Lexiles, and proficiency levels. Scale scores were analyzed using a repeated measures multivariate analysis of variance (MANOVA). 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 and attendance levels). During the 2005-2006 school year, the Lamar County School District chose to use the 48- and 50-minute protocols for the Fast ForWord products. These protocols called for students to use the products for 48 or 50 minutes a day, five days per week for eight to twelve weeks. The majority of Fast ForWord users started with the Fast ForWord Middle & High School product and continued use with the Fast ForWord Language to Reading product. Detailed product use is shown in Table 1. Students often use multiple products. Total values reflect the total number of days that students used products.

Figure 1 shows the average daily progress through the Fast ForWord Middle & High School product exercises. This graph represents the learning curve of the students as they progress through the product. Similar learning curves are available for the other products used in this study: Fast ForWord Language to Reading and Fast ForWord to Reading 4. 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 products 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	55	33	63	84%	84%	74%
Fast ForWord Language to Reading	51	31	59	70%	82%	74%
Fast ForWord to Reading 4	29	23	46	67%	90%	70%
Total product use	65	64	122	-	-	-

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. Total values reflect the total number of days that students used products and the total duration over which the products were used. Note: students often use multiple products.

Learning Curve: Fast ForWord Middle & High School

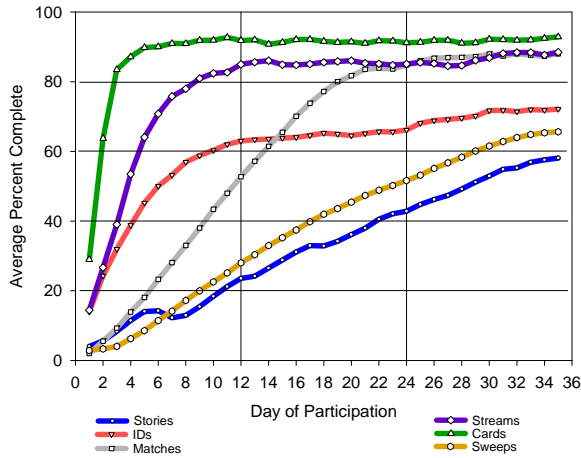


Figure 1. Average daily progress through the Fast ForWord Middle & High School product exercises. Results from 55 students are shown.

Assessment Results

Mississippi Curriculum Test (MCT): Sixty-four students had both Reading and Language scale scores from before and after Fast ForWord participation available for analysis. A MANOVA found significant improvements in reading and language achievement following use of the Fast ForWord products (Table 2). Figure 2 shows the average Reading scale scores for the study participants.

The proficiency level for each test was calculated using an average of the proficiency levels associated with each participant’s grade. The resulting calculations showed that the level required to demonstrate proficiency on the Reading subtest was 523 while the level required on the Language subtest was 535. At post-test, after Fast ForWord participation, the overall Reading scale score had reached the Proficient range while the overall Language scale score was within five points of Proficient.

	n	2005		2006		MANOVA f		
		Before		After		Test	Time	Test x Time
		Mean	SE	Mean	SE			
Reading	64	513.0	5.42	524.0	4.96			
Language	64	520.9	5.98	530.6	4.76	6.02*	12.3*	0.07

Table 2. On average, students made significant gains in reading and language achievement after Fast ForWord use. *p<0.05.

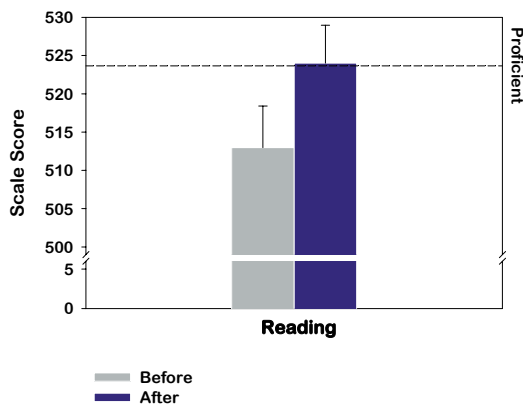


Figure 3. Students, on average, who used Fast ForWord met state standards for reading proficiency. Results from 64 students are shown. The “Proficient” line shown in the graph is a weighted average of each study participant’s grade’s proficiency scale score.

DISCUSSION

During the 2005-2006 school year, elementary and middle school students in the Lamar County School of Purvis, Mississippi participated in the study reported

here. Analysis of the MCT Reading and Language scores found significant improvements for the students as a whole after their Fast ForWord participation.

On average, students met state reading standards for proficiency and were within five points of reaching proficiency in Language. These findings demonstrate that, within the Lamar County School District, an optimal learning environment coupled with a focus on cognitive and early reading skills can help students attain a higher level of reading achievement.

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 Fast ForWord use, students in the Lamar County School District made significant gains in their language and reading skills. This suggests that using the Fast ForWord products strengthened the students’

foundational skills and better positioned them to benefit from the classroom curriculum.

Notes:

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