

Improved Language Skills by Students in the Albany 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 language skills of middle school 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 assessments. **Participants:** Study participants were students in seventh through ninth grade who were receiving special education services and were attending a junior high school in the Albany County School District of Laramie, Wyoming. **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 ability was evaluated with the Oral and Written Language Scales (OWLS) before and after Fast ForWord participation. **Results:** After Fast ForWord use, students overall made significant gains in language ability, moving from the low average range of language skills to the average range and improving from the 18th percentile to the 54th percentile.

Keywords: Wyoming, public middle school, suburban district, observational study, special education, Fast ForWord Middle & High School, Fast ForWord Language to Reading, Fast ForWord to Reading 3, Oral and Written Language Scales (OWLS).

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 Albany 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 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, Fast ForWord to Reading 3, and Fast ForWord to Reading 4) were used to evaluate the effectiveness of this approach for improving the language achievement of middle school students.

METHODS

Participants

The city of Laramie is located in southeast Wyoming, 50 miles west of Cheyenne. Once home to the Shoshone and Teton-Dakota Indians and later a railroad/cow town, Laramie today is a small college community with a rich history.

The Albany County School District is a 20 school district with a student population of approximately 3,700. One of the district schools, Laramie Junior High School, chose to use the Fast ForWord products during the 2005-2006 school year. The junior high school serves grades 7-9 and has a student enrollment of 750. Eighty-two percent of the students are Caucasian and 10% are Hispanic. About 24% are eligible for free or reduced price lunches.

Fifteen students participated in the study reported here. Students were in seventh through ninth grade with a mean grade of 7.8. All study participants were receiving special education services. Before and after Fast ForWord participation, students were evaluated with the Oral and Written Language Scales (OWLS). 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 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 Albany County School District, Fast ForWord Middle & High School, Fast ForWord Language to Reading, Fast ForWord to Reading 3, 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 both 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.

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.

Scrap Cat³: In Scrap Cat, a series of words is visually presented and participants are asked to sort each word into the correct semantic, phonological, syntactic, or morphological category. For this exercise only, the participant can click a button to hear any word and see it defined. This exercise develops decoding, vocabulary, and word recognition skills.

Canine Crew³: In Canine Crew multiple words are presented together in a grid and participants are asked to find pairs that match on the basis of the current criterion. This criterion shifts from words that rhyme, to synonyms, to antonyms, to homophones, as the participant progresses. This exercise develops vocabulary, decoding, and automatic word recognition.

Chicken Dog³: Participants hear a word and see it partially spelled. They must complete the word by filling in the missing letter or letter group. Five options are always provided, including options that represent common visual and phonological errors. This exercise develops basic spelling patterns, letter-sound correspondences, and decoding.

Twisted Pictures³: Participants are presented with a variety of pictures and asked to select the sentence that most accurately describes each picture from among

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

² Exercise from the Fast ForWord Language to Reading product.

³ Exercise from the Fast ForWord to Reading 3 product.

four alternatives. The descriptive sentences incorporate a wide range of syntactic structures. As the participant progresses, the sentences get longer and more difficult vocabulary is included. This exercise builds sentence comprehension by developing syntax, working memory, logical reasoning, and vocabulary.

Book Monkeys³ and Book Monkeys: Book Two⁴: 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.

Hog Hat Zone³ and Lulu's Laundry Line⁴: In *Hog Hat Zone*, short passages from classic children's literature are presented, with occasional gaps in the text where words are missing. Participants are asked to fill in each gap with the correct word from among four alternatives. 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 Beat⁴: The participant is presented with a question and four possible answers. The participant must choose the most appropriate answer. The 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 Jukebox⁴: 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 Quotes⁴: 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 Billboard⁴: 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 Oral and Written Language Skills (OWLS) in November 2005 before Fast ForWord participation and in May 2006 after product use.

Oral and Written Language Skills (OWLS): The OWLS is an assessment of receptive and expressive language. It is designed to assess vocabulary and grammar as well as higher-order thinking and the function and structure of language. The Oral Composite, used in this analysis, is an overall composite for the Listening Comprehension and Oral Expression Scales.

Analysis

Scores were reported in terms of standard scores and analyzed using paired t-tests and 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 Albany County School District chose to use the 48-Minute Fast ForWord Middle & High School Protocol, the 50-Minute Fast ForWord Language to Reading Protocol, and the 48-Minute Fast ForWord to Reading 3 and Fast ForWord to Reading 4 Protocols. 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. All 15 study participants started with the Fast ForWord Middle & High School product and continued with the Fast ForWord Language to Reading product. Most of the students then continued use with one or more Reading products. Detailed product use is shown in Table 1.

Figures 1 through 3 show the average daily progress through the Fast ForWord Middle & High School, Fast ForWord Language to Reading, and Fast ForWord to Reading 3 product exercises for students who had

⁴ Exercise from the Fast ForWord to Reading 4 product.

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 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	15	26	58	76%	99%	63%
Fast ForWord Language to Reading	15	40	74	72%	98%	76%
Fast ForWord to Reading 3	13	19	34	59%	97%	81%
Fast ForWord to Reading 4	4	--	--	--	--	--

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. For products with fewer than 5 participants, usage data is not shown.

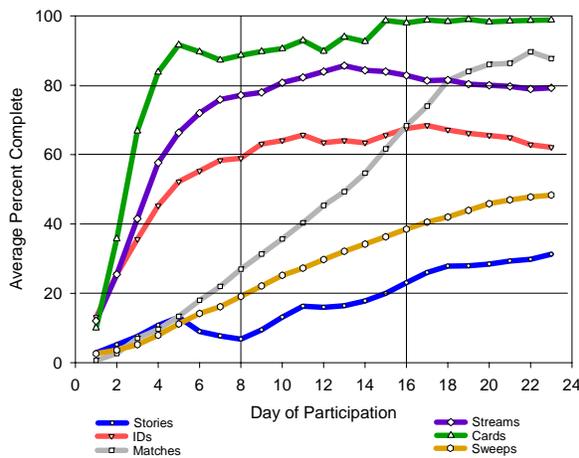


Figure 1. Average daily progress through the Fast ForWord Middle & High School product exercises. Results from 15 students are shown.

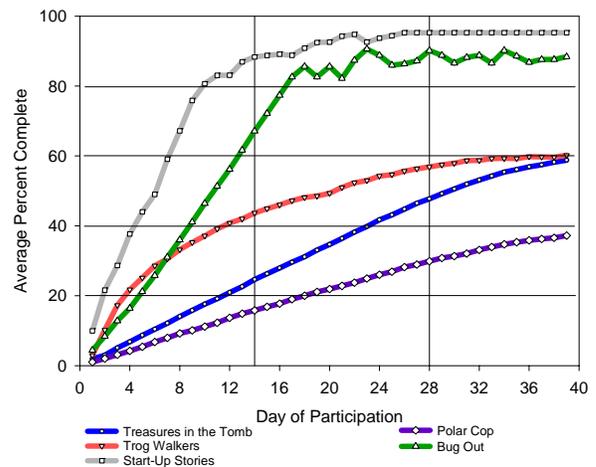


Figure 2. Average daily progress through the Fast ForWord to Reading 3 product exercises. Results from 15 students are shown.

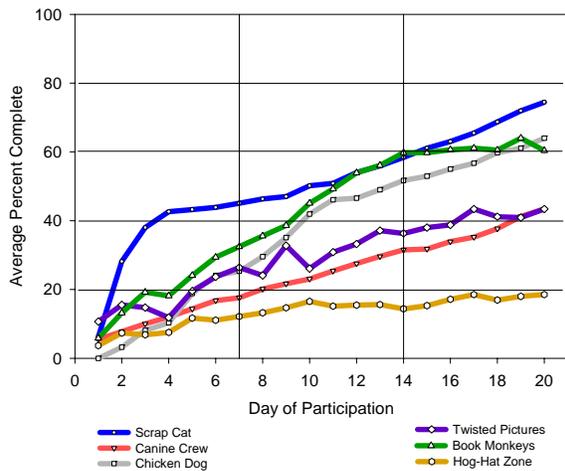


Figure 3. Average daily progress through the Fast ForWord to Reading 3 product exercises. Results from 13 students are shown.

Assessment Results

Oral and Written Language Scales (OWLS): Fifteen students had OWLS Oral Composite scores available for analysis. A repeated measures multivariate analysis of variance (MANOVA) of the subtests that comprise the Oral Composite, Listening Comprehension and Oral Expression, found students improved significantly after Fast ForWord participation (Table 2). Improvements between the two subtests were not significantly different; student gain, therefore, can be appropriately reflected in the Oral Composite measure (Figure 4).

	n	Before		After		MANOVA F		
		Mean	SE	Mean	SE	test	time	test x time
Listening Comprehension	15	84.7	2.96	101.9	3.68			
Oral Expression	15	90.8	3.86	101.9	3.36			
						1.14	49.56*	3.09

Table 2. Following Fast ForWord participation, students significantly improved their language skills.

* $p < 0.05$.

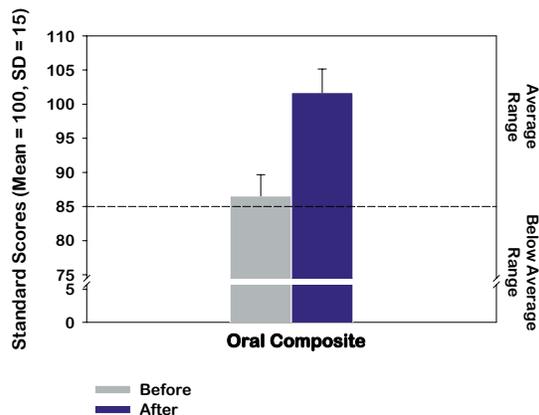


Figure 4. On average, students who used Fast ForWord products significantly improved in measures of language ability. Results from 15 students are shown.

DISCUSSION

A group of students in the Albany County School District who were receiving special education services used Fast ForWord products during the 2005-2006 school year. Student language ability was evaluated with the Oral and Written Language Scales (OWLS) and analysis of their scores showed participants made significant gains in language skills after using Fast ForWord products. Students improved from a score of 86 which is in the low average range to a score of 101 which is in the middle of the average range. These scores correspond to an improvement from the 18th percentile to the 54th percentile. These findings demonstrate that, within the Albany 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 Albany County School District made significant gains in their language 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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