

Improved Reading Skills by Students in the Anne Arundel County Public Schools 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 school students who used the products within the curriculum of a school setting. **Study Design:** The design of this study was a single school study using state assessment tests. **Subjects:** Study participants were elementary school students, some of who were receiving special education services, who were attending Sunset Elementary in the Anne Arundel County Public Schools of Annapolis, Maryland. **Methods & Implementation:** Students had their reading skills evaluated with the Maryland School Assessment (MSA) after participation with the Fast ForWord software products. **Results:** On average, students, and the students receiving special education services in particular, made significant improvements in their MSA reading performance after using the Fast ForWord software products.

Keywords: Maryland, public elementary school, suburban district, observational study, Fast ForWord Language, Fast ForWord Language to Reading, Maryland School Assessment (MSA).

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 Anne Arundel County Public Schools were interested in an optimal learning environment with a focus on early reading and cognitive skills as a way for improving the foundational skills of low-performing students; particularly the students receiving special education services. They were interested in whether this improved foundation, coupled with an intensive reading intervention based on direct instruction, would improve the reading achievement of struggling students.

In this study, commercially available products were used to evaluate the effectiveness of this approach at improving the reading achievement of students;

computer-based products (Fast ForWord Language and Fast ForWord Language to Reading) were used to build the cognitive skills and the solid foundation that struggling readers need to learn to read. Teachers used the SRA Corrective Reading program to provide the reading instruction.

METHODS

Participants

The Anne Arundel County Public Schools are a pre-Kindergarten to twelfth grade suburban school district with 119 schools serving over 74,000 students. One of the schools, Sunset Elementary, chose to participate in this study.

Sunset Elementary is a K – 5 grade school with over 500 students in attendance. Approximately 90% of the students are Caucasian and 6% are African-American. About 10% of the student population receives free or reduced price lunches. Sunset Elementary takes an aggressive approach towards teaching students to read with interventions starting in early elementary school.

Teachers recommend students for reading interventions that build foundational cognitive and reading skills if the students are struggling with phonological awareness, phonics, decoding, and fluency skills. Poor ability to follow directions is another indicator that foundational cognitive and language skills need to be developed. These initial recommendations are confirmed through assessments with the Clinical Evaluation of Language Fundamentals, Test of Phonological Awareness, and Reading Inventories. Students with confirmed

auditory processing and decoding challenges are referred to use Fast ForWord products. This study evaluates the achievement of students who were in the fourth grade during the 2003 – 2004 school year, and used the Fast ForWord products in early elementary school.

During the 2001 – 2002 school year, 14 second graders used the Fast ForWord products. During the 2002 – 2003 school year, seven third graders used the Fast ForWord products. These 21 students make up the study students. About half of the students who used Fast ForWord products each year were receiving special education services – eleven students total.

Starting with the 2003 – 2004 school year, the district used Open Court for students in regular education classes, and SRA Corrective Reading for students receiving services for special education. This means that the study group at Sunset Elementary first used the Open Court or SRA Corrective Reading curricula as fourth graders.

Students in the Anne Arundel County Public Schools are tested annually with the Maryland School Assessment (MSA). 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 Language 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 seven 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.

Circus Sequence¹ 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.

Old MacDonald's Flying Farm¹: Students hear a single syllable that is repeated several times, and then interrupted by a different syllable. They must respond when they hear a change in the syllable. This exercise improves auditory processing, develops phoneme discrimination, and increases sustained and focused attention.

Phoneme Identification¹, 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.

Phonic Match¹ 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 *Phonic Match* 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.

Phonic Words¹: 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.

Language Comprehension Builder¹: 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,

¹ Exercise from the Fast ForWord Language product.

² Exercise from the Fast ForWord Language to Reading product.

improves understanding of syntax and morphology, and improves rate of auditory processing.

*Block Commander*¹: In *Block Commander*, a three-dimensional board is filled with familiar shapes that students select and manipulate. The students are asked to follow increasingly complex commands. This exercise increases listening comprehension, improves syntax, develops working memory, improves sound processing speed, and increases the ability to follow directions.

*Start-Up Stories*²: Students follow increasingly complex commands, match pictures to sentences, and answer multiple-choice questions about stories that are presented aurally.

SRA Corrective Reading provides direct, intensive intervention for students in grades 3-12 who are reading at one or more years below grade level. Carefully planned and sequenced lessons allow struggling students the practice to become fluent readers.

Corrective Reading is a direct instruction intervention that includes four levels of decoding and four levels of comprehension targeted at the reading deficits and skill levels found in older students. It includes a point system based on realistic goals designed to encourage students who are often expected to fail.

Assessments

In 2003, students in the third grade were evaluated using the Maryland School Assessment (MSA). In 2004, students in the third through fifth grades were evaluated with the MSA. The school reported scores in terms of scale scores.

Maryland School Assessment (MSA): The MSA is an annual state assessment that evaluates knowledge of state content standards and measures student achievement in reading for grades K-8. It is a criterion- and norm-referenced assessment and meets the requirements of No Child Left Behind. Scores are reported as three statewide performance standards: Basic, Proficient, and Advanced.

For the Reading section of the MSA, a score of Proficient indicates a student is able to read and comprehend grade appropriate literature and informational passages.

Analysis

Data were analyzed using a dependent t-test. 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 2001 – 2002 school year, the Anne Arundel County Public Schools chose to use the 100-minute Fast ForWord Language protocol which calls for students to use the products for 100 minutes a day, 5 days per week, for four to eight weeks. The Fast ForWord Language to Reading protocol calls for students to use the product for 90 minutes a day, 5 days per week, for four to eight weeks.

Twenty-one students from the Anne Arundel County Public Schools used the Fast ForWord products and had MSA scores available for analysis. On average, students used the Fast ForWord Language product for 28 days, completing 81% of the product content and achieving a participation level of 77%. Eighteen students also used the Fast ForWord Language to Reading product. Detailed usage information by product is shown in Table 1.

Figures 1 and 2 show the average daily progress through the Fast ForWord Language and Fast ForWord Language to Reading exercises for all students who had MSA scores available. The final day shown on each graph 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 | Average Days | Average Calendar Days | Average Percent Complete | Participation Level |
|----------------------------------|--------------------|--------------|-----------------------|--------------------------|---------------------|
| Fast ForWord Language | 21 | 28 | 46 | 81% | 77% |
| Fast ForWord Language to Reading | 18 | 45 | 109 | 79% | 62% |

Table 1. Usage data showing the number of students who used each Fast ForWord product along with group averages for the number of days of use, the calendar days from start to finish, the percentage of product content completed and participation level.

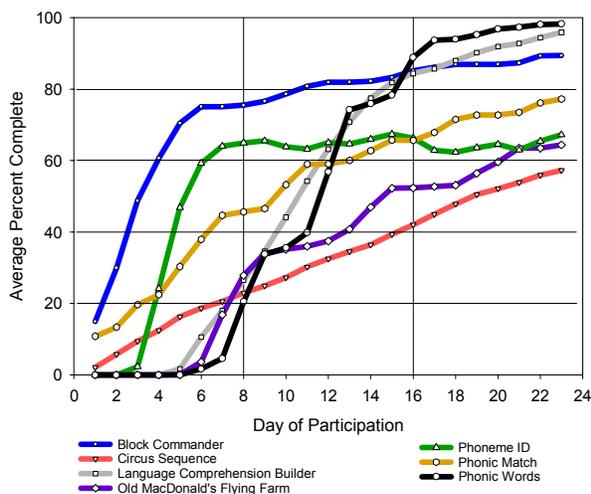


Figure 1. Average daily progress of students through the Fast ForWord Language product. Results from 21 students are shown.

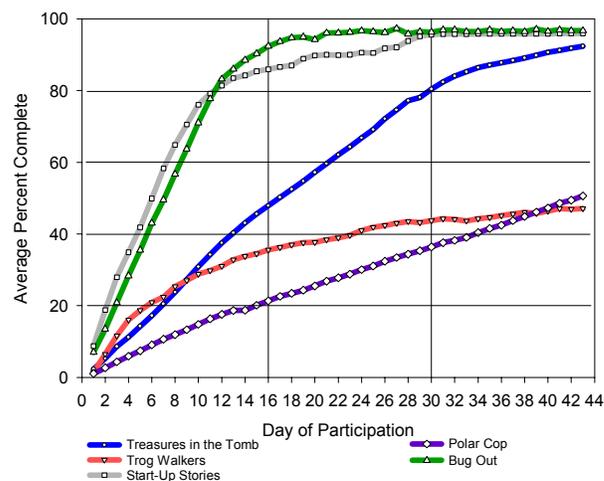


Figure 2. Average daily progress through the Fast ForWord Language to Reading product. Results from 18 students are shown.

Assessment Results

Maryland School Assessment (MSA): The Maryland School Assessment (MSA), administered in March, was used to evaluate 3rd grade students in 2003, and 3rd – 5th grade students in 2004. Scores for the MSA were reported in terms of scale scores. Overall, students showed significant improvements in their reading achievement after using Fast ForWord in conjunction with direct instruction (Figure 3).

On average, students had a scale score of 327.4 after the March 2003 MSA testing. The 2003 cutoff score for the Proficient performance standard for 3rd graders was 404. In March of 2004, an average of nine months after students had stopped using the Fast ForWord Language to Reading product and over a year after most students used the Fast ForWord Language product, students scored an average of 379.4 on the MSA, bringing them into the Proficient range. The 2004 cutoff for Proficient was 371 for fourth grade students.

On an individual student level, 5 of the 21 students were proficient in 2003. After the students used Corrective Reading to build on the foundation established by Fast ForWord participation, an additional 11 students were proficient in 2004 (76%).

For the students receiving services for Special Education, in 2003, one of the 11 students who had used Fast ForWord products was proficient. In 2004, eight of the 11 were proficient (73% of the students

who were receiving services *and* had used Fast ForWord products).

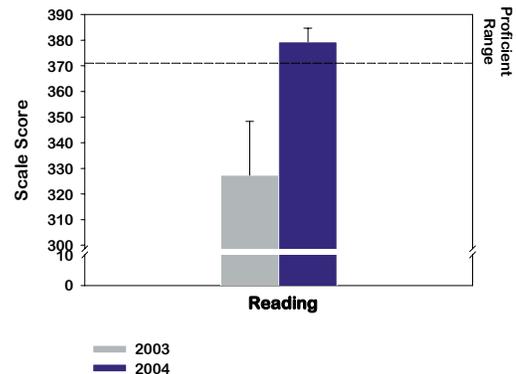


Figure 3. On average, the 21 students who used the Fast ForWord products showed significant improvements in their reading achievement after participation.

An analysis of the eleven students in the study who were receiving special education services showed that the average MSA score in 2003 at Sunset Elementary was 280.5. In 2004, after Fast ForWord participation *and* Corrective Reading, these students significantly increased their reading abilities scoring, on average, 372.9 on the MSA, bringing their average into the Proficient range.

DISCUSSION

During the 2001 – 2002 school year, a group of second grade students in the Anne Arundel County Public Schools used the Fast ForWord products. The majority (52%) of the students were receiving special education services. The Anne Arundel County Public Schools used SRA Corrective Reading for instructional intervention for struggling readers. With the implementation of this direct instruction intervention on top of the foundation built by the Fast ForWord products, 80% of students at Sunset Elementary who were receiving special education services achieved proficient reading levels. This combination of Fast ForWord products and Corrective Reading resulted in students making significant improvements in their foundational cognitive and reading skills.

| School | Population | Percent Proficient |
|---------------------|-------------------|--------------------|
| Anne Arundel County | Regular education | 86% |
| Sunset Elementary | Special education | 80% |
| Anne Arundel County | Special education | 56% |

Table 2. 82% of all fourth graders in the Anne Arundel County Public Schools are proficient readers. The above table divides the fourth graders into those receiving special education services and those receiving regular education.

In the Anne Arundel County Public Schools, 82% of the students in the 4th grade are proficient readers: 86% of the fourth graders in regular education, and 56% of the fourth graders receiving services for special education. The 80% of the students at Sunset Elementary who were receiving special education services and were proficient readers by the time they were in fourth grade compares very favorably to the 86% of fourth grade students in regular education in the Anne Arundel County Public Schools who are proficient readers, and far exceeds the achievement of fourth graders county-wide who are receiving special education services – where 56% achieve proficient reading levels in the fourth grade.

Other schools in Anne Arundel County Public Schools used Corrective Reading intervention for students receiving special education services in the 2003 – 2004 school year—but the students at Sunset Elementary had the foundational skills on which to build.

Sunset Elementary's aggressive approach for intervening with struggling readers has allowed it to reduce the number of students at the school who are receiving services for special education from 14.3% in

the 2001 – 2002 school year to 9.2% during the 2003 – 2004 school year. In addition, the students receiving special education services are reaching proficient reading levels at higher rates than ever. Fast ForWord products, in conjunction with direct instruction, have been a part of that success.

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 using the combination of Fast ForWord products and direct instruction, Sunset Elementary had one of the highest levels of proficient readers among students receiving special education services; it also had a substantial drop in the number of students receiving special education services. All students in the district were receiving the same direct instruction intervention – the difference was the foundational skills of the students at Sunset Elementary. 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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REFERENCES

- Harcourt Educational Testing. (2004). *Stanford 10 Assessment*. Maryland State Department of Education www.marylandpublicschools.org/MSDE
- Lyon, G.R. (1996). Learning Disabilities. *The future of children: Special education for students with disabilities*. 6:54-76.
- Merzenich MM, Jenkins WM, Johnston P, Schreiner CE, Miller SL, & Tallal P (1996). Temporal processing deficits of language-learning impaired children ameliorated by training. *Science*, 271, 77-80.
- Miller, S.L., Merzenich, M.M., Tallal, P., DeVivo, K., Linn, N., Pycha, A., Peterson, B.E., Jenkins, W.M., (1999). Fast ForWord Training in Children with Low Reading Performance, *Nederlandse Vereniging voor Lopopedie en Foniatrie: 1999 Jaarcongres Auditiive Vaardigheden en Spraak-taal*. (Proceedings of the 1999 Dutch National Speech-Language Association Meeting).
- SRA/McGraw-Hill (2003). *Corrective Reading*. New York, NY: The McGraw-Hill Companies.
- Tallal P, Miller SL, Bedi G, Byma G, Wang X, Nagarajan SS, Schreiner C, Jenkins WM, Merzenich MM (1996) Language comprehension in language-learning impaired children improved with acoustically modified speech. *Science* 271:81-84.