

Improved Reading Skills by Students in the El Campo Independent School District who used Fast ForWord[®] Products

MAPS for Learning: Educator Reports, 9(29): 1-5

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 second and third grade students at risk for academic failure 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 products during the 2004 – 2005 school year. Students were evaluated with the STAR Reading assessment before and after Fast ForWord use. **Results:** On average, after Fast ForWord participation students improved over one-third of a standard deviation, a gain corresponding to improvements of fourteen months in reading grade-level.

Keywords: Texas, elementary school, rural district, observational study, at-risk, Fast ForWord Language, 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 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 and Fast ForWord Language to Reading) were used to evaluate the effectiveness of this approach for improving the reading achievement of elementary school students who 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 approximately 3,500. The District enjoys a reputation for continuous improvement with a focus on technology, and has an extensive network of interventions to support student needs.

During the 2004 – 2005 school year, Hutchins Elementary chose to use the Fast ForWord 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 14% African American. Approximately 71% are eligible for free or reduced price lunches.

Teachers at Hutchins Elementary selected students who were at risk for academic failure to participate in the Fast ForWord products. Students were in the second or third grade and used the products during the school day. Before and after Fast ForWord participation, student reading ability was evaluated with the STAR Reading assessment. 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 primary products used in this study were Fast ForWord Language and Fast ForWord Language to Reading. A few students (three) used Fast ForWord Language Basics and/or Fast ForWord to Reading Prep. Six students used Fast ForWord to Reading 1 after they completed Fast ForWord Language and Fast ForWord Language to Reading.

Fast ForWord Language and Fast ForWord Language to Reading include seven and five exercises, respectively. The exercises are 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, all 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. Students 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, improves understanding of syntax and morphology, and improves rate of auditory processing.

Block Commander¹: 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 Stories²: Students follow increasingly complex commands, match pictures to sentences, and answer multiple-choice questions about stories that are presented aurally.

Assessments

Students were evaluated with the STAR Reading assessment in August of 2004, before Fast ForWord

¹ Exercise from the Fast ForWord Language product.

² Exercise from the Fast ForWord Language to Reading product.

participation and ten months later in May of 2005, after product use. A few students were still using Fast ForWord products at the time of post-testing, although almost all students had finished the Fast ForWord Language and Fast ForWord Language to Reading products by the middle of May of 2005.

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

STAR Reading scores were reported in terms of scale scores, normal curve equivalents (NCEs) and grade equivalents. NCEs, which are the most appropriate units for statistical analysis, were analyzed using paired 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 and attendance level). During the 2004 – 2005 school year, the El Campo Independent School District chose to use the 50-Minute Fast ForWord Language and Fast ForWord Language to Reading Protocols. These protocols call for students to use the products for 50 minutes a day, five days per week for eight to twelve weeks. Most students began participation with the Fast ForWord Language product and continued on to 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 Language 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 Language	160	34	63	71%	99%	75%
Fast ForWord Language to Reading	109	26	93	51%	99%	66%

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.

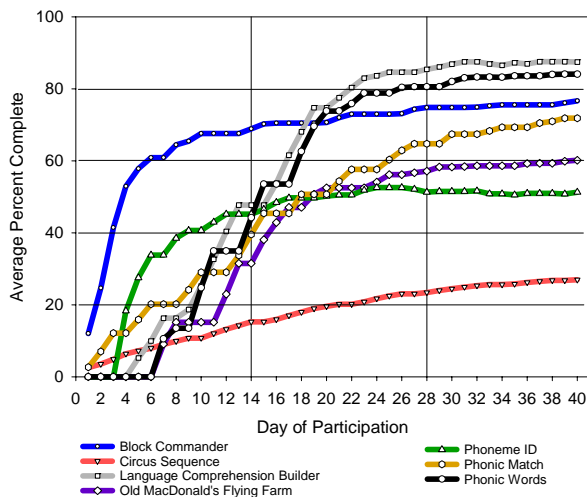


Figure 1. Average daily progress through the Fast ForWord Language product exercises. Results from 160 students are shown.

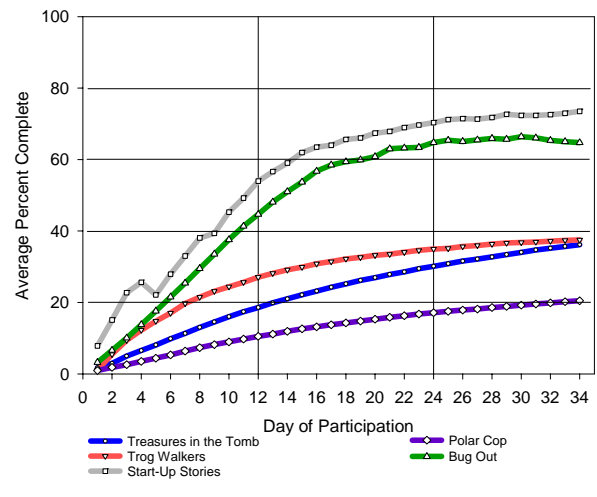


Figure 2. Average daily progress through the Fast ForWord Language to Reading product exercises. Results from 109 students are shown.

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. One hundred and sixty-seven students had STAR Reading scores from before and after product use available for analysis. Before Fast ForWord use, students had an average NCE of 40.0, which is in the average range of reading skills and corresponds to the 32nd percentile. On average, after Fast ForWord participation, students improved over one-third of a standard deviation and reached the national average of reading ability corresponding to the 50th percentile (Table 2). For descriptive purposes, these gains are shown in Figure 4 as grade-equivalents. The group of students had improvements of fourteen months in reading grade level in the ten months between test administrations.

	n	Before		After		t-statistic
		Mean	SE	Mean	SE	
STAR	167	40.0	1.09	50.1	1.18	10.01*

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

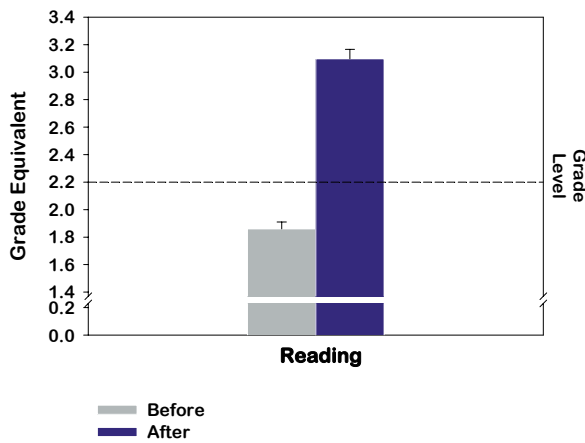


Figure 4. Students had average gains of fourteen months in reading performance after Fast ForWord use. Results from 167 students are shown.

Additional analyses were performed after separating the students into their respective grades. On average, the second and third grade groups both made significant improvements in reading skills after Fast ForWord use. The second graders improved by nearly half of a standard deviation; third graders improved by over one-third of a standard deviation (Table 3). In terms of grade equivalents, both second and third graders gained 14 months in reading grade level after Fast ForWord participation (Figures 5 and 6).

Grade	n	Before		After		t-statistic
		Mean	SE	Mean	SE	
2 nd	134	40.5	1.31	50.9	1.42	8.74*
3 rd	33	37.7	1.54	46.8	1.57	5.22*

Table 3. On average, second and third grade students significantly improved their reading skills after Fast ForWord use. *p<0.05.

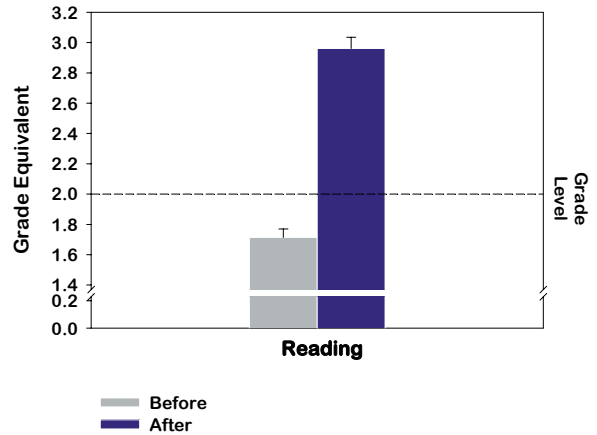


Figure 5. On average, second grade students had significant improvements in reading skills after participating on the Fast ForWord products. Results from 134 students are shown.

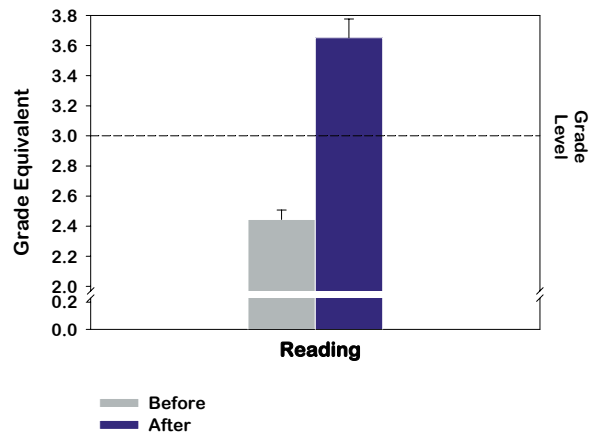


Figure 6. After Fast ForWord product use, third graders improved an average of 14 months in reading performance. Results from 33 students are shown.

DISCUSSION

During the 2004 – 2005 school year, students in second and third grade who were at risk for academic failure used the Fast ForWord products. On average, students made significant gains in measures of reading abilities after Fast ForWord use. Students improved, on average, over one-third of a standard deviation on the STAR Reading assessment, a gain corresponding to fourteen months of reading grade level. 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 student skills would improve during the ten months between the pre- and post-assessments. The improvement achieved by the students was in addition to this expected improvement. 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.

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, on average, students in the El Campo Independent School District improved fourteen months in reading performance and were reading either at or above their grade level. This suggests that using the Fast ForWord products strengthened the students' foundational skills and helped them benefit more from the classroom curriculum.

Notes:

To cite this report: Scientific Learning Corporation. (2005). Improved Reading Skills by Students in the El Campo Independent School District who used Fast ForWord® Products, MAPS for Learning: Educator Reports, 9(29): 1-5.

REFERENCES

- 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 Auditieve Vaardigheden en Spraak-taal*. (Proceedings of the 1999 Dutch National Speech-Language Association Meeting).
- Renaissance Learning. (2002). *STAR Reading*. Madison, WI: Renaissance Learning, Inc.
- 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.