

Improved Reading Achievement and Academic Skills by Students in the Miller Place Union Free School District who used Fast ForWord® Products: 2011 - 2012

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ABSTRACT

Purpose: This study investigated the effects of the Fast ForWord products on the academic skills and reading achievement of elementary school students who used the products within the curriculum in a school setting.

Results: After Fast ForWord participation, students made statistically significant gains in their academic skills and reading achievement scores. The reading rate and math skills of 3rd and 4th graders were evaluated with the AIMSweb. On average, the Fast ForWord participants improved their reading rate from 92 words per minute in the fall to 124 words per minute in the spring; their math computation improved from 23 points in the fall to 55 points spring. The reading achievement of 4th and 5th graders was evaluated with the New York State English Language Arts assessment. The Fast ForWord participants demonstrated statistically significant improvements in reading achievement, with a net increase in achievement level by 18% of participants who met minimal implementation standards.

Study Design & Participants: The design of this study was a single school case study using nationally-normed and high stakes assessments. Study participants were elementary school students in the Miller Place Union Free School District of Miller Place, New York.

Materials & Implementation: Following staff training on the Fast ForWord products, the students used the products during the 2011-2012 school year and had their reading skills and achievement evaluated before and after Fast ForWord participation with the AIMSweb, the New York State English Language Arts assessment (NYS ELA), and/or Reading Progress Indicator (RPI).

Keywords: New York, elementary school, urban district, observational study, Fast ForWord Language v2, Fast ForWord Language to Reading v2, Fast ForWord Reading Levels 1-5, AIMSweb, New York State English Language Arts assessment (NYS ELA), and/or Reading Progress Indicator (RPI).

INTRODUCTION

Numerous research studies have shown that cognitive and oral language skills are underdeveloped 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).

Further research has demonstrated that the use of an optimal learning environment with a focus on reading and cognitive skills not only benefits the auditory processing and language skills of school children who have specific language impairments, but can benefit the reading achievement of a wide range of students.

The Miller Place Union Free 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 academic skills and reading achievement of its students. In this study, the district used commercially available computer-based products (Fast ForWord Language Series, Fast ForWord Reading Levels 1 - 5) to evaluate the effectiveness of this approach for improving the reading skills and achievement of elementary school students¹.

METHODS

Participants

The Miller Place Union Free School District serves approximately 3,000 students across four schools. Approximately 91% of the students in the district are Caucasian, 2% are African American, 3% are Asian, and 3% are Hispanic; 5% of the students are eligible for free or reduced-price lunches, fewer than 1% are English language learners, and 14% receive services for Special Education.

During the 2011-2012 school year, Laddie Decker Sound Beach School chose to use the Fast ForWord products and participate in the study reported here. The school serves students in third through fifth grades. Before and after Fast ForWord participation, students were assessed with the AIMSweb, New York State English Language Arts assessment (NYS ELA) and/or Reading Progress Indicator (RPI). 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 the online reporting tool, Scientific Learning® Progress Tracker, to monitor student performance; and techniques for measuring the

gains students have achieved after Fast ForWord participation.

Materials

The Fast ForWord products are computer-based products that combine an optimal learning environment with a focus on early reading and cognitive skills. Each product includes several exercises designed to build cognitive skills critical for all learning, such as attention and memory. These exercises simultaneously develop academic skills critical for reading, such as English language conventions, phonemic awareness, vocabulary, and comprehension.

Some of the primary skills developed by these products are outlined in Table 1. More detailed descriptions of the exercises and learning modes within each product can be found online at <http://www.scientificlearning.com/exercises>.

Assessments

Before and after Fast ForWord participation, student skills and achievement were assessed with the AIMSweb, the New York State English Language Arts assessment (NYS ELA), and/or Reading Progress Indicator (RPI).

AIMSweb: AIMSweb is a benchmark and progress monitoring system based on direct, frequent, and continuous student assessment. The results are reported to students, parents, teachers, and administrators via a web-based data management and reporting system designed to determine response to intervention. Results from the Reading Curriculum-Based Measurement (RCBM), Maze, Written Expression, Math Computation, and Math Concepts & Applications assessments were used to measure reading and math skills. Scores were reported in terms of reading rates (words per minute) or correct responses.

New York State English Language Arts assessment (NYS ELA): The purpose of the New York State Testing Program is to measure a student's progress against the State's Learning Standards. As part of this program, tests of math and English language arts are administered each April to students in 3rd through 8th grade. The English language arts test (NYS-ELA) measures the student's listening, reading, and writing skills. Scores are reported in terms of scaled scores and performance levels. Performance levels 3 and above are considered proficient.

Reading Progress Indicator (RPI): Reading Progress Indicator is a computerized assessment designed to rapidly measure the impact of the Fast ForWord products. It is typically administered before using the Fast ForWord products and after completion of each product. It assesses a student's early reading skills including phonemic awareness, decoding, vocabulary, and comprehension. Scores are reported in terms of grade equivalent reading levels, scaled scores, percentiles, and normal curve equivalents.

¹ Products used by fewer than five students are not included.

Product Name	Primary Skills									
	Listening Accuracy & Auditory Sequencing	Auditory Word Recognition	English Language Conventions	Following Directions	Listening Comprehension	Phonological Skills / Phonemic Awareness	Phonics / Word Analysis	Fluency	Vocabulary	Reading Comprehension
Fast ForWord Language v2	•	•	•	•		•			•	
Fast ForWord Language to Reading v2	•		•	•	•	•	•		•	
Fast ForWord Reading Level 1					•	•	•	•	•	•
Fast ForWord Reading Level 2					•	•	•	•	•	•
Fast ForWord Reading Level 3						•	•	•	•	•
Fast ForWord Reading Level 4						•	•	•	•	•
Fast ForWord Reading Level 5						•	•	•	•	•

Table 1: The Fast ForWord products work on numerous cognitive and early reading skills. The primary skills focused on by each product are noted in the table.

Analysis

Analyses for all AIMSweb subtests except the Maze compared fall scores to spring scores. The Maze was not administered in the fall so winter scores were compared to spring scores. The NYS ELA scores were analyzed by comparing performance levels from 2011 (before participation) and performance levels from 2012 (after participation). The RPI scores were analyzed in terms of both scaled scores and normal curve equivalents, comparing the first available score to the last available score. For each measure, the data were analyzed using paired t-tests. A p-value of less than 0.05 was used 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 2011-2012 school year, the Miller Place Union Free School District chose to use the 30-Minute protocol. This protocol calls for students to use the assigned Fast ForWord product for 30 minutes a day, five days per week for twelve to sixteen weeks. It is recommended that students complete two products each year. On average, the 522 Fast ForWord participants in the school used the products for 55 days across 19 weeks with an Attendance Level of 73% and a Participation Level of 94%. Slightly more than half the students (51%) completed one or more products with 16% completing two or more. Detailed product use is shown in Table 2.

2011–2012 Product Use						
	Number of Students	Days Participated	Number of Calendar Days	Percent Complete	Attendance Level	Participation Level
Fast ForWord Language v2	144	41	93	71	74	93
Fast ForWord Language to Reading v2	32	21	53	37	71	91
Fast ForWord Reading Level 1	131	27	60	81	78	93
Fast ForWord Reading Level 2	146	29	67	66	75	94
Fast ForWord Reading Level 3	208	33	74	61	76	94
Fast ForWord Reading Level 4	169	26	57	67	77	93
Fast ForWord Reading Level 5	83	35	74	30	72	96
Total	522	55	122	-	73	94

Table 2. Usage data showing the number of students who used the Fast ForWord products for 10 or more days 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 average total number of days that students used products. Note: Students often use multiple products.

Assessment Results

AIMSweb: Three hundred forty-five students used Fast ForWord products for 10 or more days and were assessed with the AIMSweb in the Fall and Spring of the 2011-2012 school year. Between the assessments, students made statistically significant improvements on all subtests (Reading-Curriculum Based Measure, Spelling-Curriculum Based Measure, Written Expression (Total Words Written), Written Expression (Correct Writing Sequence), Math Concepts & Applications, and Math Computation. Initial Maze scores were from the winter administration; students made small improvements on the Maze between winter and spring.

	n	Fall		Spring		t-statistic
		Mean	SE	Mean	SE	
Reading-CBM	345	92.7	2.1	124.4	2.0	35.3*
Spelling-CBM	344	90.0	1.1	105.8	0.9	24.9*
Written Expression (Total Words)	345	30.7	0.8	43.8	0.8	17.2*
Written Expression (Correct Sequence)	345	24.5	0.8	40.1	0.9	20.6*
Math Concepts & Applications	344	7.7	0.2	18.2	0.4	34.0*
Math Computation	344	23.2	0.6	55.4	0.8	47.0*
Maze	343	17.9†	0.4	18.3	0.4	1.0

Table 3. AIMSweb scores for students who used Fast ForWord products for at least 10 days. The Maze scores are from Winter and Spring; all other scores are from Fall and Spring. * $p < 0.05$. † Score from winter administration.

New York State English Language Arts (NYS ELA):

Three hundred twenty-one students used the Fast ForWord products for 10 or more days and had NYS ELA scores available from both 2011 and 2012. Prior to using the products, 38% of the students were struggling to demonstrate proficiency with 9% at Level 1 and 29% at Level 2. In 2012, 20% of the students increased a level while 7% decreased a level for a net improvement by 13% of the students. In general, students who met minimal implementation standards (i.e., completed at least one product with an Attendance Level of at least 70%) were more likely to improve their achievement level (net increase by 18% of the students) (Figure 1).

Reading Progress Indicator (RPI): In addition to the AIMSweb and NYS ELA, RPI was used to evaluate the impact of the Fast ForWord products on students at Laddie Decker Sound Beach School who used the Fast

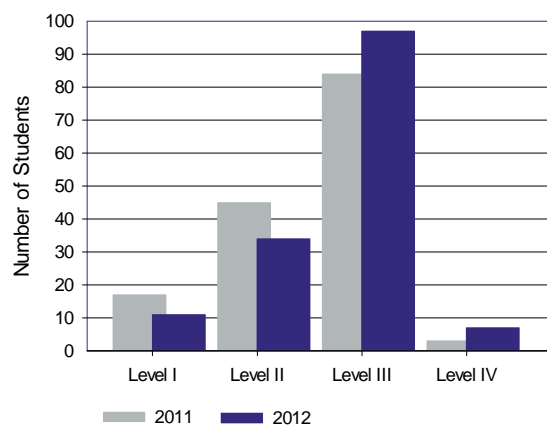


Figure 1. Histogram reflecting the NYS ELA performance level data for students who had an Attendance Level of at least 70% and who completed at least one product ($n = 149$). Overall, there was a net increase in performance level by 18% of these students.

ForWord products during the 2011–2012 school year. Two hundred forty-four students in third through fifth grade had pre- and post-participation scores and are included in the RPI evaluation. Of these students, 153 (63%) showed improvement. On the initial RPI assessment, the students demonstrated an average reading level of 4.7, which was slightly higher than their average grade level of early 4th grade. Four months later, after using the Fast ForWord products, the students' skills had improved to a reading level of 5.2, an improvement of five months.

DISCUSSION

On average, during the 2011-2012 school year, Fast ForWord participants in the Miller Place Union Free School District significantly improved their reading achievement as well as their reading, math, and language skills. Students were evaluated on a variety of assessments including the AIMSweb, NYS ELA, and RPI. Although the students' reading skills were, on average, above their grade level (as shown by their RPI scores), many of the students (38%) were below proficient on the NYS ELA assessment. After using the Fast ForWord products, there was a statistically significant increase in the students' scores with the number of students who demonstrated proficiency on the NYS ELA increasing from 62% to 71%.

These findings demonstrate that, within the Miller Place Union Free 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 and language 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, writing, math, and other academic skills. After Fast ForWord use, students in the Miller Place Union Free School District made statistically significant gains in their reading achievement as well as their reading, language, and math skills. These results replicate other studies and suggest 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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