

# Improved Reading Skills by Students in the Poteau 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 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 graders who were attending Poteau Primary School in Poteau, Oklahoma. **Materials & Implementation:** Following staff training on the Fast ForWord products, students used the products during the 2004 – 2005 school year. Student reading ability was assessed with the STAR Reading and Dynamic Indicators of Basic Early Literacy Skills (DIBELS) before and after Fast ForWord use. **Results:** On average, students made significant improvements in reading ability, gaining an average of ten months in reading skills in less than six months, and increasing their oral reading rate by 57% after participating on the Fast ForWord products.

**Keywords:** Oklahoma, elementary school, rural district, observational study, Fast ForWord Language, Fast ForWord Language to Reading, STAR Reading, Dynamic Indicators of Basic Early Literacy Skills (DIBELS).

### 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 Poteau 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.

### METHODS

#### Participants

The city of Poteau, French for “post” and named after the Poteau River which flows alongside the city, is a growing city with a rich history. Mayan Indians and Mound Builders once roamed this area and French explorers in the 1700’s led expeditions into the Poteau region.

Today, Poteau, Oklahoma is the county seat of Le Flore County and is located 130 miles southeast of Tulsa and 198 miles southeast of Oklahoma City. The Poteau School District is a pre-Kindergarten to twelfth grade school district serving almost 2,000 students. Poteau Primary, one of the four schools in the district, chose to use the Fast ForWord products during the 2004 – 2005 school year.

Poteau Primary serves grades pre-Kindergarten to second, with a student population of approximately 500. About 72% of the students are Caucasian and 20% are American Indian/Alaskan. Approximately 75% of students are eligible for free or reduced price lunches. Poteau Primary has a school-wide Title I program.

Forty-four low-performing second grade students took part in this study. Students were assessed with the STAR Reading and the Dynamic Indicators of Basic

Early Literacy Skills (DIBELS) before and after Fast ForWord product use. 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 school, Fast ForWord Language and Fast ForWord Language to Reading, 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 critical cognitive and reading skills as detailed in the following exercise descriptions.

*Circus Sequence*<sup>1</sup> and *Trog Walkers*<sup>2</sup>: 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 Farm*<sup>1</sup>: 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 Identification*<sup>1</sup>, *Polar Cop*<sup>2</sup>, and *Treasure in the Tomb*<sup>2</sup>: 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 Match*<sup>1</sup> and *Bug Out*<sup>2</sup>: 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 Words*<sup>1</sup>: 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 Builder*<sup>1</sup>: 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 Commander*<sup>1</sup>: 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*<sup>2</sup>: 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 and the Dynamic Indicators of Basic Early Literacy Skills (DIBELS) before Fast ForWord participation. Post testing for the STAR Reading was performed in December for the students who were finished with Fast ForWord products by then, and in

<sup>1</sup> Exercise from the Fast ForWord Language product.

<sup>2</sup> Exercise from the Fast ForWord Language to Reading product.

March for the rest of the students. DIBELS post-tests were administered in January 2005; the majority of the students were still using the products at this time. The average period of time between the pre and post tests was 5.3 months for the STAR and four months for the DIBELS.

**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.

**Dynamic Indicators of Basic Early Literacy Skills (DIBELS):** The DIBELS are standardized, individually administered measures of early literacy development designed to monitor the development of pre-reading and early reading skills. Skills assessed range from phonemic awareness to phonics to fluency. The appropriate skills for measuring with the DIBELS vary with the grade of the students. For students in the second grade and beyond, the appropriate measure is Oral Reading Fluency, which is a standardized test of accuracy and fluency.

The Institute for the Development of Educational Achievement, in accordance with the Reading First legislation, recognizes the DIBELS as an appropriate assessment for measuring improvement in the reading skills of children in early elementary school.

**Analysis**

Scores were reported in terms of grade equivalents and scaled scores for the STAR Reading assessment and in terms of raw scores for the DIBELS. Data were analyzed using 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). During the 2004 – 2005 school year, the Poteau School District chose to use a combination of the 50- and 100-Minute Fast ForWord Language Protocols and the 50-Minute Fast ForWord Language to Reading Protocol which call for students to use the products for 50 or 100 minutes a day, 5 days per week for four to twelve weeks. 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 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
Fast ForWord Language	44	47	102	57%	65%
Fast ForWord Language to Reading	15	35	84	55%	55%

Table 1. Usage data showing the number of students who used each Fast ForWord product along with group average for the number of days participated, the number of calendar days between start and finish, the percentage of product completed, and the participation level.

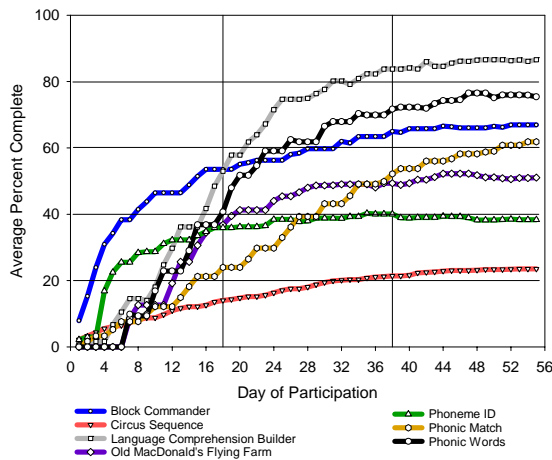


Figure 1. Average daily progress through the Fast ForWord Language product exercises. Results from 44 students are shown.

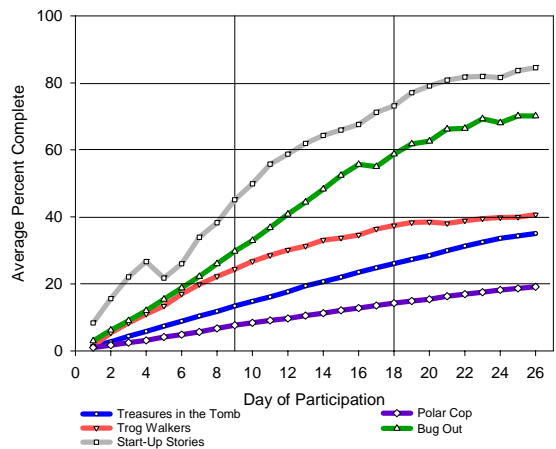


Figure 2. Average daily progress through the Fast ForWord Language to Reading product exercises. Results from 15 students are shown.

**Assessment Results**

**STAR Reading:** Scores were reported in terms of scaled scores and grade equivalents. Scaled scores were analyzed using t-tests. Students, on average, made significant improvements, gaining 122 points after Fast ForWord use (Table 2).

	n	Before		After		t-statistic
		Mean	SE	Mean	SE	
Scaled score	44	132.0	13.8	254.9	17.3	9.94*

Table 2. Students achieved significant improvements in reading ability after Fast ForWord use. \*p<0.05.

For descriptive purposes, grade equivalents are shown in Figure 3. Students were in the second grade and had an average grade-level of 1.5 before Fast ForWord product use. At the time of post-testing, an average of 5.3 months later, the group of students was at a reading grade-level of 2.3, an improvement of ten months.

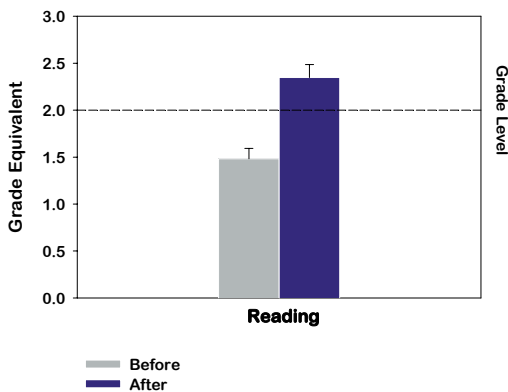


Figure 3. After Fast ForWord participation, students, on average, made gains of ten months in reading ability. Results from 44 students are shown.

**Dynamic Indicators of Basic Early Literacy Skills (DIBELS):**

The DIBELS uses indicators of risk to assess student reading ability at three testing periods throughout the school year. Risk levels range from “at risk” to “low risk”. Benchmark goals exist for each testing period: at the beginning, middle and end of the school year and correspond to the “low risk” indicator. A student at the beginning of the second grade has a benchmark goal of 44 for Oral Reading Fluency (ORF), the DIBELS measure used in this study. At the start of this study, participants had an ORF score of 39, which is in the “some risk” range. Post-testing on the DIBELS was administered in January of 2005. Using the ORF benchmark goal for the middle of year

test period, “low risk” is a score of 68 or higher. Students, on average, made significant improvements after Fast ForWord participation and had a DIBELS score of 62 which is within the “some risk” range.

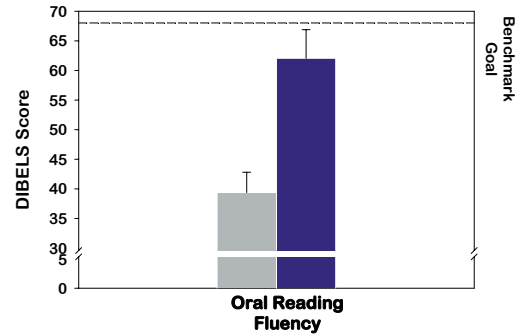


Figure 4. On average, students made significant improvements after Fast ForWord use, increasing their reading rate by 57%. Results from 44 students are shown.

**DISCUSSION**

During the 2004 – 2005 school year, second graders in the Poteau School District used the Fast ForWord products and made significant gains in reading ability. Students had average improvements of ten months in reading performance and increased their reading rate by 57%. These findings demonstrate that, within Poteau Primary, an optimal learning environment coupled with a focus on cognitive and early reading skills helped 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 instructions, and participate in class discussions. Strong linguistic skills also provide a critical foundation for building reading and writing skills. After Fast ForWord participation, students in the Poteau School District made significant gains in their reading ability. 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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