

Improved Language and Early Reading Skills of English-Language Learners in the Paradise Valley Unified School District who used Fast ForWord® Language

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ABSTRACT

Purpose: This study investigated the effects of the Fast ForWord Language software on the receptive language skills of students who were English-language learners (ELL) and who used the product within the curriculum in a school setting. **Study Design:** The design of the study was a single school case study using nationally-normed tests. Dependent t-tests were used to evaluate changes in student test performance. **Participants:** Study participants were 26 third graders at Echo Mountain Elementary School in the Paradise Valley Unified School District of Phoenix, Arizona. **Materials & Implementation:** Following staff training on the Fast ForWord products, Echo Mountain Elementary School students used the Fast ForWord Language product for an average of 29 days over an average period of 35 calendar days. Before and after Fast ForWord Language participation, student performance was evaluated by examining progress on the Receptive Language Composite of the Clinical Evaluation of Language Fundamentals-3 (CELF-3). A dependent t-test was used to compare how the study participants performed before and after using the Fast ForWord Language product. **Results:** On average, the students who used the Fast ForWord Language product made significant improvements in language and early reading skills as measured by the CELF-3. Between the two assessment times, they attained a mean standard score improvement of 12 points, nearly one standard deviation of improvement.

Keywords: Arizona, elementary school, urban district, observational study, ELL, Title I, Fast ForWord Language, Clinical Evaluation of Language Fundamentals-3 (CELF-3).

INTRODUCTION

Early laboratory tests of a prototype of a computer-based product combined an optimal learning environment with a focus on early reading and cognitive skills. The tests resulted in dramatic improvements in the auditory processing and language skills of elementary school children who had specific language impairments (Merzenich et al, 1996; Tallal et al., 1996) or were at-risk for academic failure (Miller et al., 1999). The Paradise Valley Unified School District was interested in evaluating the effectiveness of this approach in accelerating the English-learning process of one of their at-risk populations: English-language learners (ELL). They turned to a commercially available, computer-based product (Fast ForWord Language) and evaluated its effectiveness in improving the receptive language skills of their ELL students.

METHODS

Participants

The Paradise Valley Unified School District is located in the desert mountains of Phoenix, Arizona. The district is rapidly growing and serves over 35,000 students at 41 schools. During the 2001 – 2002 school year, 424 students from

four schools in the Paradise Valley Unified School District were selected by teachers and school administrators to use the Fast ForWord Language product. Two elementary schools, one middle school, and one high school used the product. Three of the four schools (one elementary, the middle, and the high school) used the Fast ForWord Language product with ELL students only; the other elementary school included both ELL and regular-education students. One school funded the program through a Title III grant named Project NUESTRO (Nurturing the Understanding of English and Spanish and Teaching Respect for Others). The district also recently approved Fast ForWord products for purchase through local technology money.

One school, Echo Mountain Elementary School, participated in a study involving an analysis of standard scores from the Receptive Language composite of the Clinical Evaluation of Language Fundamentals – Third Edition (CELF-3) that was administered before and after the students used the Fast ForWord Language product. The 26 students in the study group were all third-grade

ELL students. In general, the students had receptive language skills in the below average range.

Implementation

Educators at Echo Mountain Elementary School were trained in current and established findings on the neuroscience of 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 product candidates; 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 the product.

The elementary schools and middle school implemented the Fast ForWord Language product in their computer labs, with about 25 computers per lab; the high school used eight computers in the back of its ELL classroom.

Materials

Fast ForWord Language, a computer-based product combining an optimal learning environment with a focus on early reading and cognitive skills, was used in conjunction with the school curriculum. The product includes seven exercises designed to build skills that are critical for reading and learning, such as auditory processing, memory, attention, and language comprehension.

Circus Sequence: 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. This exercise improves working memory, sound processing speed, and sequencing skills.

Old MacDonald's Flying Farm: Students use the computer mouse to catch and hold a flying animal. The animal repeats a single syllable several times, and students must release the animal when they hear a change in the syllable. This exercise improves auditory processing, develops phoneme discrimination, and increases sustained and focused attention.

Phoneme Identification: First, students listen as one animal character utters a phoneme, and then two new animals utter similar phonemes. The students identify

which of the latter two sounds was identical to the first phoneme. This exercise improves auditory discrimination skills, increases sound processing speed, improves working memory, and helps students identify specific phonemes.

Phonic Match: 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. This exercise develops auditory word recognition and phoneme discrimination, improves working memory, and improves rate of auditory processing.

Phonic Words: Students see two pictures representing two similar words that differ only by initial or final consonant ("tack" versus "tag"). When students hear the word representing one of the pictures, 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: 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: In Block Commander, a three-dimensional board game is filled with familiar shapes that students select and manipulate. The students are asked to follow increasingly complex commands. This exercise increases listening comprehension and the ability to follow directions, improves syntax, develops working memory, and improves sound processing speed.

Assessments

In the spring of 2002, students in the study had their receptive language skills evaluated before and after they used the Fast ForWord Language product. School personnel administered the Clinical Evaluation of Language Fundamentals-3 (CELF-3) and reported the scores for analysis. Scores were reported in terms of standard scores.

Clinical Evaluation of Language Fundamentals-3 (CELF-3):

The CELF-3 is a comprehensive language test widely used to measure a student's overall language ability. The Institute for the Development of Educational Achievement, in accordance with the Reading First legislation, determined that the CELF-3 subtests listed in Table 1 are appropriate outcome assessments for accurately measuring improvement in the vocabulary skills of children in early elementary school. As defined by the Reading First legislation, vocabulary skills are an essential component of early reading. On the CELF-3, standard scores have a mean of 100 and a standard

deviation of 15 (in this metric, scores from 85 to 115 are within the normal range).

Analysis

Standard scores for all study students were compared using a dependent t-test. The analysis used a p-value of 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). The Fast ForWord Language protocol used at Echo Mountain Elementary School called for students to use the product for 100 minutes a day, five days a week, for four to eight weeks.

During the spring of 2002, 26 Echo Mountain Elementary School students used the Fast ForWord

Language software. On average, the students used the product for 29 days over a period of 35 calendar days, completing 72% of the product content, and achieving a participation level of 59% (Table 2). The average daily progress through the exercises for the first 25 days for all students is charted in Figure 1. (For students who used the product fewer than 25 days, percent complete is maintained at the level achieved on their final day of product use.)

CELF-3 Subtest	Description of Subtest
Concepts & Directions	a receptive language assessment that tests the student's ability to interpret and execute commands of increasing complexity
Word Classes	a receptive language assessment that tests the student's ability to understand relationships between words and categories

Table 1. Two receptive language subtests from the CELF-3 are recognized by the Institute for the Development of Educational Achievement as appropriate assessments for measuring early reading skills, specifically vocabulary.

Number of Students	Average Days of Product Use	Average Number of Calendar Days	Average Overall Percent Complete	Average Participation Level
26	29	35	72%	59%

Table 2. Usage data showing the number of study students who used the Fast ForWord Language product. Also shown are the group averages for the number of days they used it, the calendar days between start and finish, the percentage of content they covered, and their participation level (the percentage of 100 minutes per day, five days per week, that the students actually used the Fast ForWord Language product).

Daily Progress through Fast ForWord Language by Echo Mountain Students

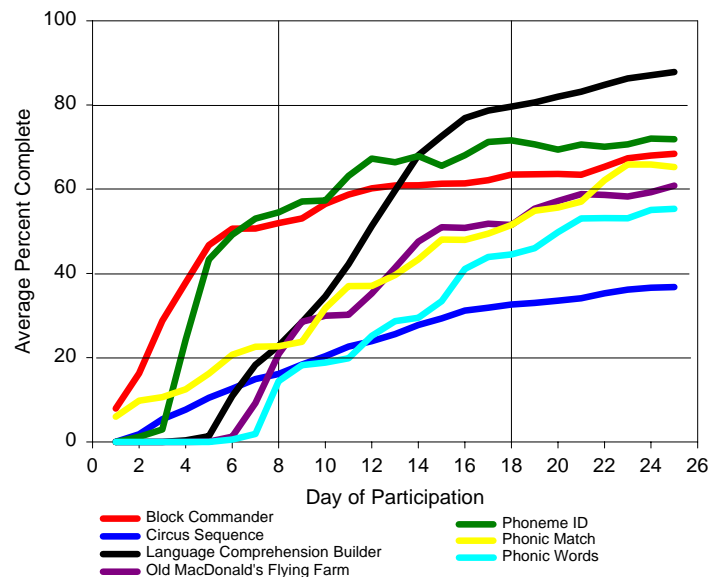


Figure 1. Average daily progress over the first 25 days of use for Echo Mountain Elementary School students in the study. The students used the Fast ForWord Language product in the spring of 2002.

Assessment Results

Clinical Evaluation of Language Fundamentals-3: CELF-3 receptive language standard scores were reported for students in the study before and after they used the Fast ForWord Language software. Before participation, on average, the students had receptive language skills in the below average range. Of the 26 students, 19 of them (73%) increased their receptive language standard score between the two assessment times. A dependent t-test showed that, on average, the students made statistically significant improvements (Table 3).

The group’s mean standard score increased from 69.3 to 81.1, resulting in a score closer to the average range. Figure 2 shows the mean gain of students in the study in overall receptive language skills. Figure 3 and Table 4 show the mean improvement on the two CELF-3 receptive language subtests recognized as appropriate for measuring improvements in early reading skills – specifically for measuring vocabulary. The improvement on Concepts and Directions was statistically significant.

CELF Receptive Language	n	Before		After		t-value
		Mean	SE	Mean	SE	
Standard Score	26	69.3	2.6	81.1	3.4	4.8*

Table 3. Overall, 26 ELL students who used the Fast ForWord Language product made statistically significant gains in receptive language and early reading skills, as measured by the CELF-3. *p < 0.05.

CELF Receptive Language	n	Before		After		t-value
		Mean	SE	Mean	SE	
Concepts and Directions	26	5.4	0.4	6.8	0.4	5.1*
Word Classes	26	5.6	0.4	6.2	0.5	1.9

Table 4. Overall, 26 ELL students who used the Fast ForWord Language product made statistically significant gains in vocabulary skills as measured by the CELF-3. *p < 0.05.

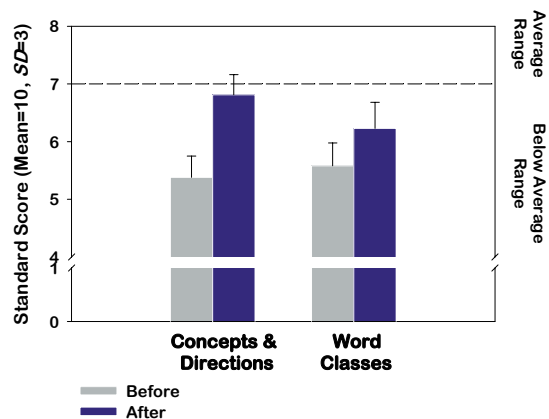
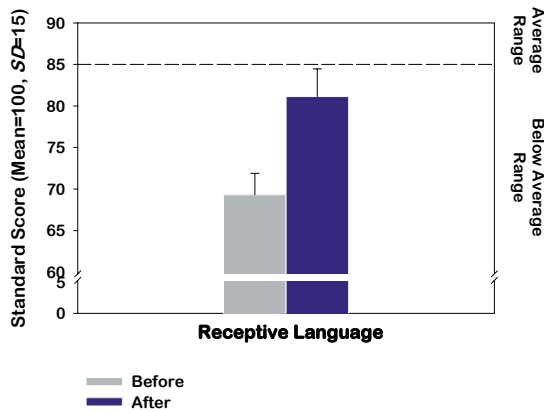


Figure 2. In this elementary school case study, the receptive language skills of 26 ELL students were evaluated. On average, after using the Fast ForWord Language product, the students made significant improvements, moving closer to the average range.

Figure 3. Two receptive language skills recognized as appropriate assessments of early reading skills were evaluated for 26 ELL students. On average, after using the Fast ForWord Language product, the students made significant improvement in Concepts and Directions and made improvements in Word Classes.

DISCUSSION

All of the study’s students from Paradise Valley Unified School District were ELL students. Before participation, 12% of them were evaluated as having receptive language skills in the average range. By the spring of 2002, after

the students had used the Fast ForWord Language product, 50% were evaluated as having receptive language skills in the average range. On average, their mean receptive language standard score on the CELF-3 showed significant improvement. Comprised of subtests

that measure vocabulary skills, these findings demonstrate that, within the Paradise Valley Unified School District, an optimal learning environment, coupled with a focus on cognitive and early reading skills, can help ELL students attain a higher level of academic achievement.

CONCLUSION

After attending a conference on dyslexia, staff from the Paradise Valley Unified School District decided to approach the problem of the students who were learning English from its cognitive roots. They wanted to help these ELL students build their foundational early reading and cognitive skills in order to improve their reading ability. After an average of five weeks of using the Fast ForWord Language product, the ELL students built their critical early reading and cognitive skills and strengthened their vocabulary, better positioning them to partake in the classroom curriculum.

Notes:

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