Improved Language Skills by Students in the Albany County School District who used Fast ForWord® Products
2006-2007

MAPS for Learning: Educator Reports

ABSTRACT

Purpose: This study investigated the effects of the Fast ForWord products on the language skills of junior high school 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 a nationally normed assessment. **Participants:** Study participants were students attending Laramie Junior High School in the Albany County School District of Laramie, Wyoming. **Materials & Implementation:** Following staff training on the Fast ForWord products, the students used the products during the 2006-2007 school year and had their language and early reading skills evaluated with the Oral and Written Language Scales (OWLS) before and after Fast ForWord participation. **Results:** Overall, Fast ForWord participants improved significantly in language and early reading skills, improving from the 23rd to the 40th percentile following 60 days of product use.

Keywords: Wyoming, public middle school, suburban district, observational study, Fast ForWord Middle & High School, Fast ForWord to Literacy, Fast ForWord Language to Reading, Fast ForWord to Literacy Advanced, Fast ForWord to Reading 3, Oral and Written Language Scales (OWLS).

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 Albany County School District was interested in continuing their evaluation of the effectiveness of an optimal learning environment with a focus on early reading and cognitive skills as a way to improve the language and reading achievement of their students in a school setting. In this study, commercially available computer-based products (Fast ForWord Middle & High School, Fast ForWord to Literacy, Fast ForWord Language to Reading, Fast ForWord to Literacy Advanced, and Fast ForWord to Reading 3) were used to evaluate the effectiveness of this approach for improving the language and reading achievement of junior high school students.

METHODS

Participants

The city of Laramie is located in southeast Wyoming, 50 miles west of Cheyenne. Once home to the Shoshone and Teton-Dakota Indians, and later a railroad/cow town, Laramie today is a small college community with a rich history.

The Albany County School District is a 20 school district with a student population of approximately 3,700. One of the district schools, Laramie Junior High School, chose to use the Fast ForWord products during the 2006-2007 school year. The junior high school serves grades 7-9 and has a student enrollment of approximately 700. Eighty-two percent of the students are Caucasian and 12% are Hispanic. About 25% are considered economically disadvantaged.
Twenty-nine students in Laramie Junior High School used the Fast ForWord products during the 2006-2007 school year. Students were in seventh through ninth grade with an average grade level of 7.5. Before and after Fast ForWord participation, the students were assessed with the Oral and Written Language Scales (OWLS). 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 products used by the Albany County School District, Fast ForWord Middle & High School, Fast ForWord to Literacy, Fast ForWord Language to Reading, Fast ForWord to Literacy Advanced, and Fast ForWord to Reading 3, include five to six exercises designed to build skills critical for reading and learning, such as auditory processing, memory, attention, and language comprehension. While there are variations across products related to the specific skills targeted and the approaches taken, there are several critical skills developed in all of the products, as detailed in the following exercise descriptions.

Streams/Galaxy Goal: Students hear a single syllable that is repeated several times, and then interrupted by a different syllable. Students must respond when they hear the change in the syllable. This exercise improves auditory processing, develops phoneme discrimination, and increases sustained and focused attention.

IDS/Spin Master, Polar Cop/Meteor Ball, and Treasure in the Tomb/Lunar Leap: 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/Meteor Ball also develops sound-letter correspondence skills. Treasure in the Tomb/Lunar Leap also develops grapheme recognition.

Matches/Lunar Tunes and Bug Out!/Laser 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. The Matches/Lunar Tunes exercise develops auditory word recognition and phoneme discrimination, improves working memory, and increases sound processing speed. The Bug Out!/Laser Match exercise develops skill with sound-letter correspondences as well as working memory.

Cards/Star Pics: 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.

Stories/Stellar Stories and Start-Up Stories/Galaxy Theater: Students listen to stories, then answer multiple-choice questions about them, match pictures to sentences, and follow commands of increasing complexity. As participants integrate information across the sentences of a paragraph, and across the paragraphs of a story, they build listening comprehension skills. These exercises simultaneously develop basic language skills such as auditory word recognition, auditory memory, and basic vocabulary, along with more complex language skills such as attending to word and sentence structure. These exercises provide a comprehensive “cross-training” of oral language skills, to create a solid foundation for reading.

1 Exercise from the Fast ForWord Middle & High School/Fast ForWord to Literacy product.
2 Exercise from the Fast ForWord Language to Reading/Fast ForWord to Literacy Advanced product.

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Scrap Cat: Students are asked to sort a series of visually-presented words into the correct semantic, phonological, syntactic, or morphological categories. For this exercise only, students can click a button to hear any word and see it defined. This exercise develops decoding, vocabulary, and word recognition skills.

Chicken Dog: Students hear a spoken word and see it partially spelled. They must complete the word by filling in the missing letter or letter group. Five options are always provided, with foils representing common visual and phonological errors. This exercise develops basic spelling patterns, letter-sound correspondences, and decoding.

Canine Crew: Students are asked to match pairs of words within a grid. Grid size increases as the student develops mastery, and the matching criterion shifts from rhyming words to synonyms, antonyms, and, finally, homophones. This exercise develops vocabulary, decoding, and automatic word recognition.

Twisted Pictures: Students are presented with a series of pictures and visually-presented sentences. They are asked to select the most accurate description of each picture from the four accompanying sentences. The descriptive sentences incorporate a wide range of syntactic structures. As the student progresses, the sentences get longer and more difficult vocabulary is included. This exercise builds sentence comprehension by developing syntax, working memory, logical reasoning, and vocabulary.

Book Monkeys: Students read narrative and expository passages and answer comprehension questions about each passage. The student selects the best answer from among four alternatives. The multiple-choice questions demand that the student use memory to retrieve specific details, generate inferences, and grasp causal relationships. This task develops paragraph comprehension, cause-and-effect reasoning, working memory, flexible reading, and vocabulary.

Hog Hat Zone: In Hog Hat Zone, short passages from classic children’s literature are presented, with occasional gaps in the text where words are missing. Students are asked to fill in each gap with the correct word from among four alternatives. The missing words are grammatically important items such as pronouns, auxiliary verbs, and words with suffixes and prefixes. This task develops paragraph comprehension, complex morphology, flexible reading, and vocabulary.

Assessments
Before and after Fast ForWord participation, student language and early reading skills were assessed with the Oral and Written Language Scales (OWLS).

Oral and Written Language Scales (OWLS): The OWLS is an assessment of receptive and expressive language. It is designed to assess vocabulary and grammar as well as higher-order thinking and the function and structure of language. The Oral Composite, used in this analysis, is an overall composite for the Listening Comprehension and Oral Expression Scales.

Analysis
Scores were reported in terms of standard scores. Data were analyzed using a repeated measures multivariate analysis of variance (MANOVA) and paired t-tests that 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 and attendance levels). During the 2006-2007 school year, the Albany County School District chose to use the 48- and 50-Minute protocols. These protocols called for students to use the product for 48 or 50 minutes a day, five days per week for six to ten weeks. Detailed product use is shown in Table 1.

Figure 1 shows the average daily progress through the Fast ForWord Middle & High School product exercises. This graph represents the learning curve of the students as they progress through the product. The other products used in this study, Fast ForWord to Literacy, Fast ForWord Language to Reading, Fast ForWord to Literacy Advanced, and Fast ForWord to Reading 3, have similar learning curves. 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.

3 Exercise from the Fast ForWord to Reading 3 product.
### Table 1

<table>
<thead>
<tr>
<th>Product</th>
<th>Number of Students</th>
<th>Days Participated</th>
<th>Number of Calendar Days</th>
<th>Percent Complete</th>
<th>Participation Level</th>
<th>Attendance Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fast ForWord Middle &amp; High School</td>
<td>16</td>
<td>26</td>
<td>44</td>
<td>88%</td>
<td>98%</td>
<td>84%</td>
</tr>
<tr>
<td>Fast ForWord to Literacy</td>
<td>13</td>
<td>16</td>
<td>26</td>
<td>86%</td>
<td>99%</td>
<td>89%</td>
</tr>
<tr>
<td>Fast ForWord Language to Reading</td>
<td>16</td>
<td>30</td>
<td>71</td>
<td>74%</td>
<td>98%</td>
<td>71%</td>
</tr>
<tr>
<td>Fast ForWord to Literacy Advanced</td>
<td>13</td>
<td>31</td>
<td>59</td>
<td>83%</td>
<td>93%</td>
<td>84%</td>
</tr>
<tr>
<td>Fast ForWord to Reading</td>
<td>15</td>
<td>15</td>
<td>27</td>
<td>63%</td>
<td>97%</td>
<td>85%</td>
</tr>
<tr>
<td>Total</td>
<td>29</td>
<td>60</td>
<td>116</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

**Table 1.** Usage data showing the number of students who used the Fast ForWord products, 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

**Oral and Written Language Scales (OWLS):** Data were reported in terms of standard scores for 29 students. Scores from Listening, Oral Expression, and Oral Composite were available for analysis. A MANOVA of the Listening and Oral Expression scales showed a main effect of time, indicating that students performed better after Fast ForWord participation. There was no significant test by time effect, meaning that there was no significant difference in the improvements between the two subtests (Table 2). Student improvement can therefore be reflected in the Oral Composite scale, which is a combination of the Listening and Oral Expression scales (Figure 2). On average, students made a significant improvement of 7 points (approximately half of a standard deviation) in language and early reading skills following Fast ForWord participation.

### DISCUSSION

During the 2006-2007 school year, Fast ForWord participants in the Albany County School District used the Fast ForWord products for an average of 60 days. Following this use, the students significantly improved their language and early reading skills. Students had average gains of 7 points in the Oral Composite score, moving further into the average range after Fast ForWord product use. In terms of percentiles, the students improved from the 23rd to the 40th percentile. These findings demonstrate that, within the Albany County School District, an optimal learning environment coupled with a focus on cognitive and early reading skills continues to help students attain a higher level of language and reading skills.
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, students in the Albany County School District made significant gains in their language and early reading ability. This confirms the results from last year and further demonstrates that using the Fast ForWord products strengthened the students’ foundational skills better positioning them to benefit from the classroom curriculum.

Notes:

REFERENCES


