

# Improved Reading Skills by High School Students in the Pocatello / Chubbuck School District #25 Who Used Fast ForWord® Middle & High School

MAPS for Learning: Educator Reports, 7(5): 1-4

## ABSTRACT

**Purpose:** This study investigated the effects of Fast ForWord products on the reading skills of middle and high school students when implemented within the curriculum in a summer school setting. **Study Design:** The design of the study is a single school case study using data from a commercially available, nationally normed screening test of academic achievement. **Participants:** Study participants were 19 fifth to eleventh grade summer school students, at Highland Senior High School in the Pocatello / Chubbuck School District #25 in Pocatello, Idaho. **Materials & Implementation:** Following staff training on the Fast ForWord products, 19 summer school students at Highland Senior High School used the Fast ForWord Middle & High School product for 22 days over a period of 35 calendar days, on average. To evaluate performance, student skills prior to and following Fast ForWord Middle & High School use were determined by examining progress on the Woodcock-McGrew-Werder Mini-Battery of Achievement (MBA). A t-test was used to compare how the study participants performed before and after using Fast ForWord Middle & High School. Their gains are discussed relative to expected changes on the nationally normed assessment. **Results:** On average, the students who used the Fast ForWord Middle & High School product made significant improvements in their reading skills as measured by the MBA with students improving from the below average range (standard score = 83.6) into the average range (standard score = 92.5).

**Keywords:** Idaho, middle school, urban district, observational study, at-risk students, Fast ForWord Middle & High School, Woodcock-McGrew-Werder Mini-Battery of Achievement (MBA).

## INTRODUCTION

Early laboratory tests evaluated a prototype of a computer-based product that combines an optimal learning environment with a focus on early reading and cognitive skills. The findings were 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). Pocatello / Chubbuck School District #25 was interested in evaluating the effectiveness of this approach for improving their curriculum and instruction for summer school students, as measured by commercially available, nationally normed reading measures. In this study, a commercially available computer-based product (Fast ForWord Middle & High School) was used to evaluate the effectiveness of this approach for improving the reading skills of students in the summer school program.

## METHODS

### Participants

During the 2003 summer school session, 19 students at Highland Senior High School, in Pocatello, Idaho, participated in a study evaluating the Fast ForWord Middle & High

School product. The study involved an analysis of the students' scores from a screening test that was administered before and after they used Fast ForWord Middle & High School. The students in the study were selected by teachers and school administrators, and were all reading below grade level. The students were completing grades five through eleven, with a majority completing grades seven through nine.

### Implementation

Educators at Highland Senior High 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.

## Materials

The computer-based product combining an optimal learning environment with a focus on early reading and cognitive skills that was used was Fast ForWord Middle & High School. It includes six exercises designed to build skills that are critical for reading and learning, such as auditory processing, memory, attention, and language comprehension.

*Sweeps:* Students hear a series of short, non-verbal tones, and must duplicate the sequence. Each tone represents a different fragment of the frequency spectrum used in spoken language. To respond correctly, students must be able to differentiate between the tones and remember their sequence. This exercise improves working memory, sound processing speed, and sequencing skills.

*Streams:* Students listen to a stream of syllables. At first a dummy syllable is repeated, then it changes to the target syllable. Students must respond when they hear that the initial phoneme (speech sound) in the syllable has changed. This exercise improves auditory processing, develops phoneme discrimination, and increases sustained and focused attention.

*IDs:* Students listen to a target syllable, and then listen to two comparison syllables. They must identify which comparison syllable matches the target. This exercise improves phoneme discrimination skills, develops working memory, and increases rate of auditory processing.

*Matches:* Students click on a tile from a grid and hear a sound or word. Each tile has a match (one that makes the same sound or word) somewhere within the grid. The goal is to match all the tiles and clear the grid. This exercise develops auditory word recognition and phoneme discrimination, improves working memory, and increases rate of auditory processing.

*Cards:* Students are presented with two pictures representing words that differ only by initial or final consonant (e.g., “tack” versus “tag”). After hearing the target word, they must click the matching picture. This exercise improves rate of auditory processing, phoneme discrimination, and word recognition.

*Stories:* Students listen to an episode from a story, then complete several tasks: answering comprehension questions, following instructions, and selecting the picture that best depicts a sentence. This exercise improves listening comprehension, rate of auditory

processing, understanding of syntax and morphology, and sequencing skills.

## Assessments

At the beginning of summer school, and again at the end (before and after using Fast ForWord Middle & High School) students' reading skills were evaluated with the Identification, Vocabulary, and Comprehension subtests of the Woodcock-McGrew-Werder Mini-Battery of Achievement (MBA). Scores in these three skill areas can be combined for a total reading score. School personnel administered the screener, and reported the scores for analysis. Scores were reported in terms of raw scores (for the individual subtests) and percentiles, standard scores, and grade equivalents for the overall reading score.

**Mini-Battery of Achievement (MBA):** The MBA is a screening test that assesses a broad range of academic skills including reading, writing, mathematics and factual knowledge. The MBA assessment of reading consists of three subtests:

- **Identification** measures the student's reading identification skills for isolated letters and words.
- **Vocabulary** measures the student's skill in reading words and supplying their appropriate meanings.
- **Comprehension** measures the student's skill in reading short passages and identifying the missing words.

## Analysis

Student achievement was reported in terms of Standard Scores, percentiles, and grade equivalents. All statistical analyses were done using the Standard Score values. The grade-equivalent scores were used for descriptive purposes only. Standard Scores for all study students from the beginning and end of summer school were compared using a t-test. A p-value of 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 level). The Fast ForWord Middle & High School protocol used at Highland Senior High School called for students to use the product for 90 minutes a day, five days a week, for four to eight weeks.

During the summer of 2003, the 19 study students used the product for an average of 22 days over a period of 35 calendar days, completing 79% of the product content, and achieving a participation level of 88% (Table 1). The average daily progress through

the exercises for the first 20 days is charted in Figure 1 for all students. (Of the 19 students, 12 used the product for at least 21 days. For students who

participated fewer than 21 days, percent complete is maintained at the level achieved on their final day of participation.)

Number of Students	Average Days Participated	Average Number of Calendar Days	Average Overall Percent Complete	Average Participation Level
19	22	35	79%	88%

Table 1. Participant usage showing the number of students who used the Fast ForWord Middle & High School product, the average number of days they participated, the calendar days between start and finish, the percentage of content they covered, and their participation level (the percentage of 90 minutes per day, five days per week, that the students actually used the Fast ForWord Middle & High School product).

### Daily Progress in Fast ForWord Middle & High School for Students in Summer School at Highland Senior High School

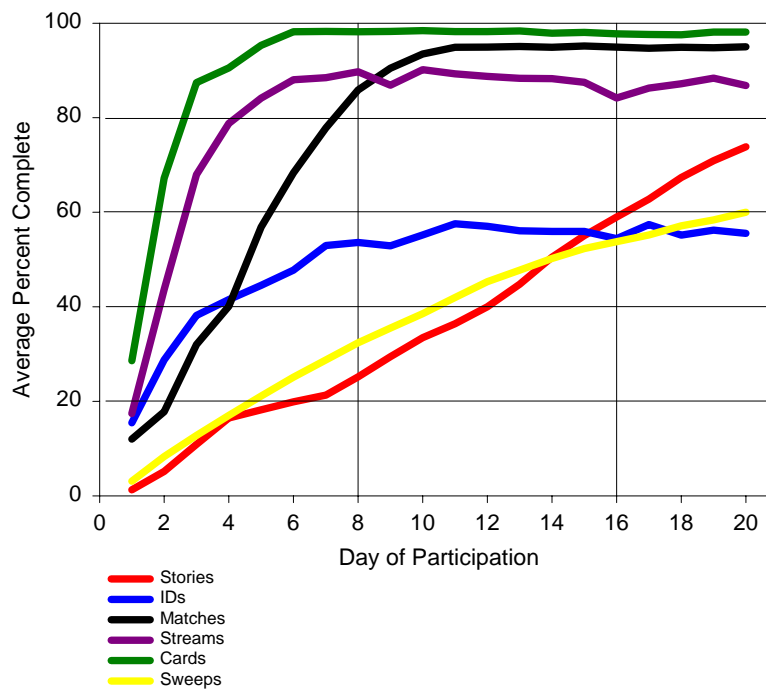


Figure 1. Average daily progress over the first 20 days of use for 19 summer school students at Highland Senior High School who were involved in a study of the Fast ForWord Middle & High School product.

### Assessment Results

#### Mini-Battery of Achievement:

MBA Standard Scores for reading were reported for all study students. A t-test showed that, after using Fast ForWord Middle & High School, the students made statistically significant improvements (Table 2) with average scores

increasing from 83.6 to 92.5 (Figure 2). Using the grade-equivalent scores, the students, whose average grade level was 9.0, started out at an average grade-equivalence of 5.4. At the end of summer school, they were at a level of 7.0. Of the 19 study participants, five students not only moved closer to grade-level, but surpassed it.

Mini-Battery of Achievement	n	Beginning of Summer School		End of Summer School		t-value
		Mean	SE	Mean	SE	
Scale Score	19	83.6	2.6	92.5	4.0	-3.285*

Table 2. Overall, 19 middle and high school students made statistically significant gains in reading, as measured by the MBA reading score. \*p < 0.05.

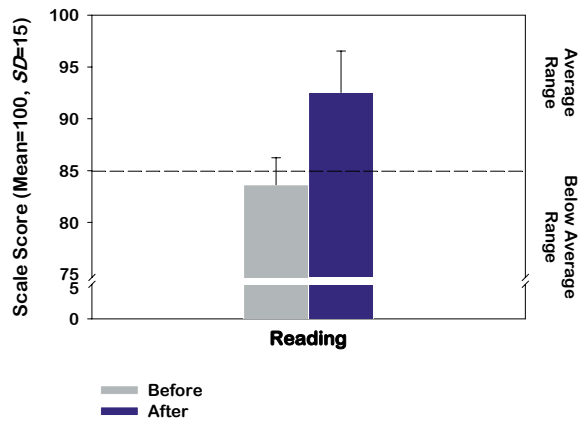


Figure 2. In this high school case study, the reading skills of 19 students were evaluated. On average, these students made significant improvements, with scores improving from below the average range into the average range.

## DISCUSSION

All of the Pocatello / Chubbuck School District #25 students selected to participate in this study were involved in summer school and reading below grade-level. Through both their progress in Fast ForWord Middle & High School and their improved assessment scores, these students have shown that they can improve their early reading and cognitive skills. An optimal learning environment coupled with a focus on early reading and cognitive skills resulted in significant improvements for

students attending summer school within Pocatello / Chubbuck School District #25 as demonstrated by reading improvements on the MBA.

## CONCLUSION

The results found in this study support the original studies that showed improved language skills, and demonstrate that using the Fast ForWord Middle & High School product also results in the strengthening of foundational reading skills, better positioning students to partake in the classroom curriculum.

### Notes:

- To cite this report: Scientific Learning Corporation. (2003). Improved Reading Skills by High School Students in Pocatello / Chubbuck School District #25 who used Fast ForWord® Middle & High School, MAPS for Learning: Educator Reports, Vol. 7, No. 5: pp. 1-4.

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