Improved Reading Skills by Marion County Students who used Reading Assistant™ in an Intensive Summer Program

Scientific Learning: Research Reports, 14(1): 1-4

ABSTRACT

Purpose: This study investigates the effects of using Scientific Learning Reading Assistant software on the reading skills of elementary level students who used the product within a month-long summer school program focused on reading and language arts.

Results: Following the use of Reading Assistant software, along with supplemental use of the Fast ForWord Reading Level 3 product and other academic activities, the study group made significant gains in reading ability. In one-month, study participants gained 68 Lexile points, indicating that they had made more than half a year's gain in their reading comprehension skills, on average.

Study Design & Participants: The design of this study was a single-school case study using a nationally normed assessment. This study included 60 students who were preparing to enter the fifth grade in the Marion County Schools, Marion County, West Virginia. Results are reported for the 47 students who completed testing at the beginning and end of the summer program and received Lexile scores for both tests.

Materials & Implementation: Following staff training on Reading Assistant and Fast ForWord products, a group of students used the products in July, 2009, as part of Marion County Schools' Summer Academy in Reading and Language Arts. Before and after the Summer Academy, the students' reading abilities were assessed with a standardized, nationally-normed assessment of reading comprehension: the Scholastic Reading Inventory (SRI).

Keywords: West Virginia, elementary, rural, observational study, Reading Assistant, Fast ForWord Reading Level 3, Scholastic Reading Inventory (SRI).

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).

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.

During July, 2009, the Marion County Schools, in Marion County, West Virginia, evaluated the impact of using Scientific Learning products within an intensive Reading and Language Arts Summer Academy for improving the reading skills of students preparing to enter the fifth grade. Study participants used Scientific Learning Reading Assistant software, along with supplemental use of the Fast ForWord Reading Level 3 product and other academic activities. At the end of the Summer Academy, the study group demonstrated significant improvements in reading comprehension as measured by the Scholastic Reading Inventory (SRI).

METHODS

Participants

In July, 2009, 60 students took part in this study while participating in the Marion County Schools' Summer Academy for Reading and Language Arts. All of the students were preparing to enter the fifth grade, and they had

been selected for the Summer Academy on the basis of test scores; as fourth graders, these students had demonstrated "partial mastery" of West Virginia's Content Standards and Objectives for Reading and Language Arts on the WESTEST-2008.

At the beginning and end of the Summer Academy, the students were assessed with the Scholastic Reading Inventory (SRI). School personnel administered the tests and reported scores for analysis.

The analyses included data from 47 students. Of the original 60 students, post-test scores were missing for nine who left the program early or were absent on the final testing day. In addition, four students did not receive Lexile scores for either their pre-test (3) or their post-test (1) because they were performing at the "Beginning Reader" level.

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 importance of guided oral reading practice for building reading fluency; 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 Scientific Learning products.

Materials
The Summer Academy was focused on reading and language arts interventions. The teacher to student ratio was 1:8. Four days a week, from 8:00 AM to 1:30 PM, students worked on vocabulary development, the writing process, and reading comprehension strategies. Students also took weekly field trips. The learning interventions comprised Reading Assistant, Fast ForWord Reading Level 3, and other academic activities with a hands-on focus.

Scientific Learning Reading Assistant is a computer-based tutor for guided oral reading. Combining advanced speech recognition technology with research-based interventions, Reading Assistant helps elementary and secondary students strengthen their reading fluency, vocabulary, and comprehension skills.

Reading selections within Reading Assistant were assigned on the basis of student Lexile scores from the SRI pre-test.

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.

Primary Skills / Product Name	Phonological Skills / Phonemic Awareness	Phonics / Word Analysis	Fluency	Vocabulary	Reading Comprehension
Reading Assistant			•	•	•
Fast ForWord Reading Level 3	•	•	•	•	•

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

Assessments
Before and after participating in the Summer Academy, student reading skills were assessed with the Scholastic Reading Inventory (SRI).

Scholastic Reading Inventory (SRI):
The SRI is a research-based, computer-adaptive reading assessment for Grades K–12 that measures students' level of reading comprehension. All SRI test questions are based on authentic text passages, both fiction and nonfiction, that increase test validity as well as student interest and motivation. The test's level of difficulty automatically adjusts in response to students' answers, resulting in fast, accurate assessment that is suitable for progress monitoring.

Analysis
Scores were reported in terms of raw scores and Lexile scores. Lexile scores were used for all analyses. Forty-seven students had Lexile scores from before and after participation available for analysis. Their scores were analyzed using a t-test. A p-value of less than 0.05 was used as the criterion for identifying statistical significance.

RESULTS

Participation Level
Students worked for 30 minutes per day on Reading Assistant and 30 minutes per day on Fast ForWord Reading Level 3, three to four days per week, for four weeks. (The students' Fast ForWord use is considered supplemental because the limited time available during the Summer Academy prevented them from following the recommended protocol of 30 minutes a day, five days per week, for twelve to sixteen weeks).

Assessment Results
Forty-seven study participants took the Scholastic Reading Inventory (SRI) before and after the Summer Academy, and received Lexile scores at both time points. Table 2 and Figure 1 show average Lexile scores before and after the study group used Reading Assistant software as part of their summer program.

Measure	Before		After	
	Mean	SE	Mean	SE
SRI	537.7	22.2	605.4	19.6

Table 2. Lexile scores before and after Reading Assistant participation within a summer school program. Mean scores and standard errors are shown for 47 students who took the Scholastic Reading Inventory (SRI) and received Lexile scores at the beginning and end of the summer program.

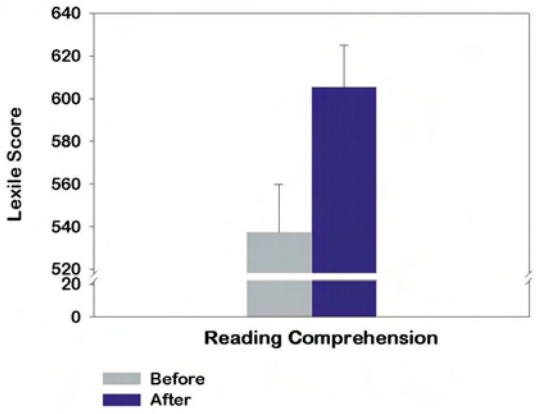

Figure 1. On average, students demonstrated significantly improved reading comprehension, following Reading Assistant participation with supplemental use of Fast ForWord Reading 3 in a summer program for reading and language arts. Results from 47 students are shown.

For descriptive purposes, it is possible to characterize these results more fully, based on the normative information that is available. MetaMetrics, makers of the Lexile scale, has published a table of interquartile norms for each grade at mid-year. These norms show the range of Lexile scores found for students between the 25th and 75th percentile in reading. Table 3 shows an excerpt of that table for grades 4 and 5.

Grade	Interquartile Range (Mid-year)
4	445L to 810L
5	565L to 910L

Table 3. Lexile Reader Measures typical of readers performing between the 25th and 75th percentiles in grades 4 and 5.

This table indicates that in the year between 4th grade and 5th grade, the middle 50% of students is expected to gain 100 to120 points. The study group was in the grade range of these norms, and their average score (prior to intervention) fell within the interquartile range for 4th graders, so it is reasonable to compare their average gain of 68 points to the expected yearly gain of 100 to 120 points.

This comparison indicates that the study participants gained more than half a year in reading comprehension after just one month of Reading Assistant use in a summer program with supplemental Fast ForWord Reading Level 3 participation and other reading and language arts activities.

DISCUSSION

During a 2009 summer school session, 60 Marion County students used Scientific Learning Reading Assistant software as part of an intensive program for building reading and language arts skills and participated in the study reported here. Student reading skills were assessed with the Scholastic Reading Inventory (SRI) at the beginning and end of the study; 47 of the students received Lexile scores for both time points. Their SRI results indicated that study participants made significant improvements in reading comprehension during the session, gaining more than half a year in one month.

These findings show that, in the Marion County Schools, an optimal learning environment coupled with a focus on cognitive skills, reading skills, and guided oral reading can help students rapidly become better readers.

CONCLUSION

Language and reading skills are critical for all students, impacting their ability to benefit from instruction, follow directions, participate in class discussions, and learn from texts. After Reading Assistant participation, rising fifth graders in the Marion County Schools made significant gains in reading comprehension. This suggests that using the Reading Assistant software strengthened the students' foundational skills and better positioned them to benefit from the classroom curriculum.

Notes:

To cite this report: Scientific Learning Corporation. (2010). Improved Reading Skills by Marion County Students who used Reading Assistant™ in an Intensive Summer Program. *Scientific Learning: Research Reports, 14*(1): 1-4.

REFERENCES

Lyon, G.R. (1996). Learning Disabilities. The future of children: Special education for students with disabilities. 6:54-76.

Merzenich MM, Jenkins WM, Johnston P, Schreiner CE, Miller SL, & Tallal P (1996). Temporal processing deficits of language-learning impaired children ameliorated by training. Science, 271, 77-80.

MetaMetrics (2009).Grade Equivalent Chart: Typical reader and text measures by grade. http://www.lexile.com/about-lexile/grade-equivalent/grade-equivalent-chart/

Miller, S.L., Merzenich, M.M., Tallal, P., DeVivo, K., Linn, N., Pycha, A., Peterson, B.E., Jenkins, W.M., (1999). Fast ForWord Training in Children with Low Reading Performance, Nederlandse Vereniging voor Lopopedie en Foniatrie: 1999 Jaarcongres Auditieve Vaardigheden en Spraak-taal. (Proceedings of the 1999 Dutch National Speech-Language Association Meeting).

Scholastic (1999). Scholastic Reading Inventory. New York, NY: Scholastic.

Tallal P, Miller SL, Bedi G, Byma G, Wang X, Nagarajan SS, Schreiner C, Jenkins WM, Merzenich MM (1996). Language comprehension in language-learning impaired children improved with acoustically modified speech. Science 271:81-84.

West Virginia Department of Education (2008). WESTEST-2008. CTB-McGraw–Hill (CTB), Monterey, CA.