

A Study of an Online Reading Intervention for Secondary English Language Learners

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ABSTRACT

A study was conducted to evaluate the effectiveness of an intensive ESL (English as a Second Language) reading online intervention for Hispanic ELL students at the secondary level. Dependent measures are described. The intervention involved student program use 45 minutes per day, three days a week, over eight months with approximately 66 ESL students. It was concluded that implementing the intensive on-line technology intervention for ELL Hispanic students in middle and secondary classrooms is feasible and valuable.

Introduction

The pace of immigration to the United States from other countries has significantly increased and is reflected in today's classrooms. The population of immigrants reflects great cultural and linguistic diversity. This can be a challenge in a school system that is primarily conducted in English. The number of those students who do not speak English as their primary language is increasing. In 1979, an estimated nine percent of all five to seventeen year-olds in the U.S. were language minorities, by 2006, that percent increased to 20.3 % (National Center for Educational Statistics, 2006, Table1).

While much attention focuses on those students in elementary school, many United States middle and high schools are enrolling increasing numbers of learners whose home language is not English. While these students may be identified by the acronym ELLs (English language learners), "they are far from a uniform group, differing in length of time in the United States, level of first language and literacy proficiency, previous education, socioeconomic circumstances, and individual student development" (National Clearinghouse for English Language Acquisition, 2006, p. 1). Designing and providing appropriate materials and instruction for such a culturally and linguistically diverse group is a challenging task for teachers and administrators.

According to the U.S. Department of Education (2004), our public schools serve about 5.1 million English language learners (ELLs). Eighty percent of ELLs speak Spanish at home. The percent of public school teachers who instructed at least one or more English language learners in grades K-12 was estimated at 42.6 % in 2001-2002 (Developmental Associates, 2003. p.13). Educators especially need information on how to serve older post-primary English language learners to improve practice in the middle and secondary grades (Snow, 2006).

Research indicates that when students are schooled in first language (L1) and second language (L2) at least through grade five or six, it takes an average of four to seven years to acquire L2 (Collier, 1992; Cummins, 2000; Genesee, 1987; Krashen, 2003; Ramírez, 1992). Conversely, it takes a minimum of five to ten years to acquire academic grade level norms in L2, if the new immigrants are schooled in L2 only (Collier & Thomas, 1989; Cummins, 1992; Genesee, 1987; Ramirez, 1992).

ELL students must academically accomplish what is expected of monolingual students. In addition, they must learn a second language within the same time span. When ELLs enter the United States at the secondary level, the challenge magnifies because they have less time than elementary students to learn L2, English, and complete all the academic credits in order to graduate from high school. Thus, educating English language learners at the secondary level represents a difficult challenge that must be understood through further empirical research on effective aids for intervention.

Online materials offer a different media approach for instructional use. These instructional materials allow the inclusion of both auditory and visual elements that reflect evolving changes being made possible by technology (Kress, 1996, 2000). Such online materials, when well-designed and well-implemented, may lend the opportunity to

construct multimodal learning environments where students can interact with both auditory and visual presentations of the English language (Jewitt, Kress, Ogborn, & Charalampos, 2001; Parks, Huot, & Lemonnier, 2003). This preliminary study may provide a basis for future studies of multimodal effects.

The setting for the study was in Texas where the performance of English language learners, the majority of whom are Hispanic, is low on state-wide academic assessments (Texas Education Agency, 2008). Texas ELLs at the secondary level traditionally are taught in English, since the bilingual education programs span only from PK to fifth grade. The online instructional materials being studied provided a supplement to the materials used in the classroom and were tracked according to their amount of use.

Second Language Reading On-line Intervention

There is a strong need for new methodology that helps accelerate the second language reading acquisition process. Limited methodologically-rigorous research exists on reading instruction in a second language (August & Hakuta, 1997). The August and Shanahan (2006) report provides a synthesis of recent research and reiterates the need for more descriptions, longitudinal studies and replications of research studies. Their report emphasizes the complexity of studying this area. Technology-based programs can be useful because of their capacity for storage, description, and measurement of student interaction. Such programs offer curricular and teaching support while being tailored to variation in individual students' learning levels, styles, and needs. Technology is becoming an integral component of all education (Wolf & Hall, 2005) but its effectiveness needs to be monitored and evaluated.

Purpose and Research Question

The purpose of this study was to assess the effectiveness of a second language English reading on-line intervention with low achieving Hispanic students in five ESL (English as a second language) middle and high school classrooms in Texas. The intervention, *ESLreadingsmart.com*, is designed to improve the language and reading skills of upper elementary, middle and high school ESL students. The program uses culturally relevant content and integrates reading, listening, writing, and speaking activities. It incorporates literature in the teaching of language skills. It also uses multimedia, computer-enabled instruction to accommodate different learning styles and English proficiency levels. Technically, as an online program, the material could also have been accessed outside of school. An answer to the following question was sought: Over an eight-month period, will the ESL reading online intervention implemented 45

minutes per day and three days per week, improve the second language reading acquisition by Spanish speaking students at the secondary level?

Methods

The study was conducted in five ESL classrooms at the secondary level on four campuses of a public school district in Central Texas. The city where the study was implemented had a population of 49,083 at the time of the study. Approximately 7,400 students attended the district's public schools (preK-12). The limited English proficient (LEP) population (pre-K-12) was comprised of roughly 586 students. Approximately 429 students were in the Bilingual Program and 157 students were in the English as a Second Language (ESL) program (6-12). Also, a total of 98% of LEP students were eligible for the free and/or reduced lunch based on household income.

ESL Program

The ESL Program in this district is the traditional model that Texas has adopted, which is English as a second language (ESL) for secondary ELL students (TEA, 2000). This model of instruction uses only the English language. Teachers teach English and academics through ESL methodology such as *Total Physical Response*, *Suggestopedia*, visuals, and *Realia*, among others (See Appendix A for resources). In Texas, ELLs are categorized into four levels of English language proficiency: beginner, intermediate, advanced, and advanced-high using assessments according to the state guidelines (TEA, 2000). Depending on their language proficiency level, ELLs at the secondary level are assigned to two periods of ESL a day for beginner and intermediate students, and one period a day for advanced and advanced-high students. In one of the middle schools and at the high school where this study took place, beginners are also categorized as "new comers."

Design and Procedure

Student participants initially were 66 Hispanic ELLs attending classes in three middle schools and one high school. A convenience sample of pre-identified classes in the three middle schools and high school was used for this study. Class lists of the names of the students were used to randomly assign participants to each of the two groups in the study. An alternating pattern, accept-exclude, of identification was used to assign

students to two groups. One group started *the ESLreadingsmart.com* intervention at the beginning of the school year (resulting in eight months of access). The other group started near the middle of the academic year (resulting in four months of access). Each of the classrooms had approximately fifteen students per class. Their ESL category was mainly beginner and intermediate with the exception of the “new comers” centers where all of the students were beginners. Most participants were first generation Mexican American immigrants meaning they were the first generation in their family to immigrate to the United States. Students had immigrated to the U.S. from different states in Mexico. For instance, some students had come from the northern part of Mexico such as Tamaulipas and Coahuila, others from the southern part of Mexico such as Oaxaca; still others came from central Mexico such as San Luis Potosi and Guadalajara. Their ESL language classification placed them at risk for successful reading in English without a targeted and effective intervention (August & Hakuta, 1997; Gersten & Jimenez, 1994; Snow, Burns, & Griffin, 1998).

Description of the Intervention Program

The intervention is a web-based, multimedia, online environment for ESL students and teachers. It provides a multilevel reading program and curriculum that supports individualized ESL classroom instruction from late elementary to high school. In addition to the online resources, teachers can print out reading selections, lesson plans, teaching aids, and activity sheets. Support is provided for vocabulary, comprehension, writing, and art. The content is based on international themes and emphasizes multi-genre (myths and legends, biographies, poetry, and short stories) and multicultural literature. Its content is designed to be culturally relevant. The intervention program is the first online ESL reading and curriculum program adopted in Texas. The program tracks the number of lessons completed, the number of activities within a lesson, and the level of mastery achieved (<http://www.ESLreadingsmart.com>). The *ESLreadingsmart.com* reading program is aligned to the Lexile® Framework for reading which provides an index of readability of the reading selections in the program.

Intervention Procedure

This program was designed to accelerate second language English and reading development. Teachers received an orientation on the use of the program. Before the students began this program, their teachers trained them in English on how to use it. Training time for students was about one hour during a regular ESL class period. Students used the program in one of two ways, according to their assigned groups. The actual intervention involved student access to the program for 45 minutes per day, three

days a week, over eight school months with students from ESL secondary classrooms on four campuses including two “new comer” centers. Each of the classes in the study was divided into two groups. One group began working with the program at the beginning of the study while the other group waited until the mid point of the study to begin the program.

Assessment Instruments

Assessments utilized during the study included the *Woodcock-Muñoz Language Survey-Revised (WMLS-R)* (English form), the *RPTE (Reading Proficiency Test in English)*, the Lexile Framework, and the record of the level of work samples students generated through interaction with the program.

The *Woodcock-Muñoz Language Survey-Revised (WMLS-R)*, English form, consists of sets of individually administered tests that provide a broad sampling of proficiency in oral language, language comprehension, reading, and writing. "Combinations of tests provide cluster scores for interpretive purposes" (p. 1). Two tests from the *Woodcock Muñoz* provide a cluster score for the construct of reading: Test 3, Letter-word Identification (which measures basic reading skills) and Test 7, Passage Comprehension (which measures reading comprehension scores) (Alvarado, Ruef, & Schrank, 2005, p.70). These two *WMLS-R* tests were used to measure changes in reading growth.

The *RPTE (Reading Proficiency Test in English)* is a standards-based assessment originally developed to mirror the reading test format of the *Texas Assessment of Academic Skills (TAAS)*. It has been restructured to reflect the current state test used, the *Texas Assessment of Knowledge and Skills (TAKS)*. The *RPTE* results provide a measure of progress along a continuum of English language development designed for second language learners (TEA, 2004).

The Lexile Framework[®] for Reading is a scientific approach to reading and text measurement. It includes the Lexile[®] measure and the Lexile scale. The Lexile measure is a reading ability or text difficulty score followed by an “L” (e.g., “850L”). The Lexile scale is a developmental scale for reading ranging from 200L for beginning readers to above 1700L for advanced text. All Lexile Framework products, tools and services rely on the Lexile measure and scale to match reader and text (MetaMetrics, 2007).

The student work sample reports are recorded and retained by the *ESLreadingsmart.com* program. It tracks the lessons and activities attempted and the level of mastery achieved. The records can reveal students' level of engagement with the material.

Results

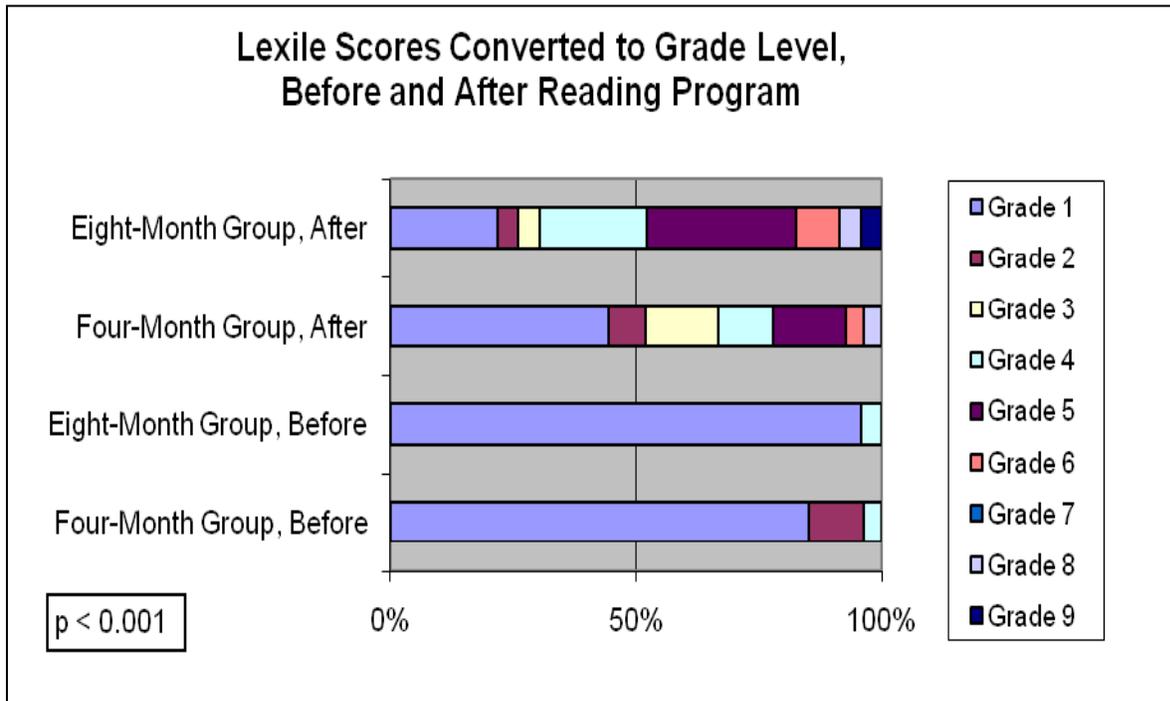
Lexile scores for the individual student reading selections were converted to grade level designations and described in Table 1 and Figure 1.

Table 1

Lexile Scores Converted to Grade Level, Before and After Reading Program				
	Before		After	
	Four-Month Group	Eight-Month Group	Four-Month Group	Eight-Month Group
Grade 1	85%	96%	44%	22%
Grade 2	11%	0%	7%	4%
Grade 3	0%	0%	15%	4%
Grade 4	4%	4%	11%	22%
Grade 5	0%	0%	15%	30%
Grade 6	0%	0%	4%	9%
Grade 7	0%	0%	0%	0%
Grade 8	0%	0%	4%	4%
Grade 9	0%	0%	0%	4%
N	27	23	27	23

p < 0.001

Figure 1



Notice the changes for the two groups before and after the *ESLreadingsmart* intervention. Both groups were predominantly clustered in Lexile scores equivalent to a first grade level (85% for the four-month group and 96% for the eight-month group). Lexile scores increased significantly ($p < 0.001$) for both groups. For example, the four-month group posted Lexile score equivalents of grades one, two, and four before the *ESLreadingsmart* intervention. After the intervention, the four-month group posted Lexile score equivalents in grades one, two, three, four, five, six and eight (a change from 85% working at grade one to only 44% at that level). Similarly, the eight-month group posted Lexile score equivalents of grades one and four before the *ESLreadingsmart* intervention. After the intervention, the eight-month group posted Lexile score equivalents in grades one, two, three, four, five, six, eight, and nine (a dramatic change from 96% working at grade one to a full range of grade level reading skills with only 22% still working at grade level one). When these group changes are looked at as individual changes, students in the eight-month intervention improved their Lexile grade equivalent score by an average of three grades, while those in the four-month program only improved by an average of one-and-a-half grades ($p=0.05$). This is shown in Table 2.

Table 2 Lexile Grade Change for Individuals in Reading Program

Groups	Count	Average	Variance
Eight-Month	23	2.87	4.48
Four-Month	27	1.63	5.17

$p=0.05$

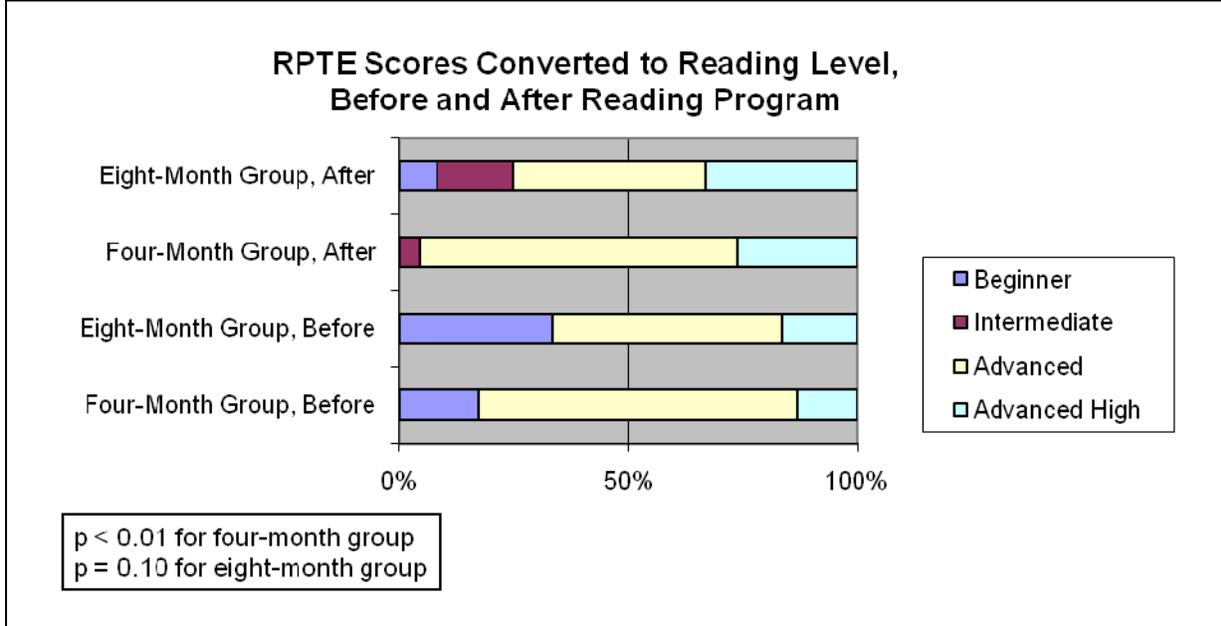
The RPTE scores were assigned to quartile designations: beginner, intermediate, advanced, and advanced high categories (see Table 3 and Figure 2).

Table 3

RPTE Scores Converted to Reading Level, Before and After Reading Program				
	Before		After	
	Four-Month Group	Eight-Month Group	Four-Month Group	Eight-Month Group
Beginner	17%	33%	0%	8%
Intermediate	0%	0%	4%	17%
Advanced	70%	50%	70%	42%
Advanced High	13%	17%	26%	33%
N	23	12	23	12

$p < 0.01$ for four-month group
 $p = 0.10$ for eight-month group

Figure 2



The RPTE test was administered before and after the *ESLreadingsmart* program. Results of the test reveal that the four-month group made statistically significant improvement with the 17% of students at the beginner reading level shifting to higher quartiles ($p < 0.01$). Advances were made for the eight-month group also, but were not statistically significant ($p = 0.10$). Examples of the important gains were as follows: (1) of the 33% beginner students in the eight-month group, only 8% remained beginners after the use of the *ESLreadingsmart* intervention; (2) no students were listed in the intermediate quartile for the pre test; however, after the intervention, 17% scored in the intermediate quartile; (3) 17% of the students posted scores in the advanced high quartile for the pre-test; however, post-test results reveal 33% had achieved advanced high rankings.

The low statistical significance for the eight-month group in Table 3 is probably because of the low number of participants in the sample size. To test this, the results were entered twice, to double the sample size. This produced an N of 24 and a p value of 0.016, supporting that the groups' change probably would have been statistically significant if we had more participants.

The individuals in the eight-month intervention improved their RPTE grade level by an average of 0.67, while the four-month participants averaged a 0.48 grade level increase. This is shown in Table 4, but this is not statistically significant.

Table 4 RPTE Reading Level Change for Individuals in Reading Program

Groups	Count	Average	Variance
Eight-Month	12	0.67	0.75
Four-Month	23	0.48	0.79

$p > 0.05$

The *Woodcock Muñoz* LWI (Letter, word identification) and PC (Passage comprehension) scores showed no significant change. The final mean scores for the groups were 88 and 85 for LWI and 74 and 71 on PC. This suggests that the intervention did not show improvement as measured by these subtests.

Discussion

This study investigated whether the *ESLreadingsmart.com* intervention would improve secondary Spanish-speaking students' English reading acquisition. The main measures included the Woodcock Muñoz (*WMLS-R*) *English*, the *Reading Proficiency Tests in English* (RPTE), the Lexile Framework, and the level of text with which they could successfully engage.

The reality of the classroom and instructional practice is complex, diverse, and subject to multiple interruptions in routine. Students at the middle and high school level change classes in different configurations and are surrounded and exposed to complex variations in classroom personnel, materials, and assignments. Controlling for these variables is extremely difficult. Gaining access to individual computers and providing support to personnel when technical issues arise also become essential component to conducting research. Lack of control of these factors may have influenced results.

Number of Students

The number of students originally randomly assigned in the groups was 66. However, over time there was student attrition and some student scores for data entry were not available. This reduced the scores available for data analysis. While the number of students in the study was relatively small, we believe the importance of the intervention along with the gains made by the students underscore the need for such interventions.

Collecting Data in Real World Contexts

Individualized testing provides rich sources of information. However, as number involved in a study increases, so does the need for additional personnel to do the individualized testing within a given time frame, as student availability is also limited.

Additionally, gathering data from students about prior education is limited by a lack of written records and variability in individual self-report.

Research studies require personnel, time, and financial support. More descriptive data could have been included if more time had been available for classroom observations. Financial support was supplied directly or indirectly by the universities where the authors work and the producer of the online program, *ESLreadingsmart.com* who provided the software to the school district during the period of the study. It also supplied the funds to pay the extra outside independent assessors obtaining individual test results. The study should be replicated by others. For replication, it would be advisable to seek additional grant support. Future studies similar in design to our study would be strengthened if a greater number of students participated in the groups.

Concluding Remarks

We designed the study to assess the effectiveness of a second language English reading on-line intervention with low achieving Hispanic students in ESL middle and high school classrooms on four campuses. We have reported results that suggest positive outcomes and gains by students in the study. It is important to note that these types of studies require attention to many details related to the implementation of the intervention. For example, fidelity to the design and methodology of research studies is challenging in school settings where daily and weekly schedules are altered given local needs and requirements of school campuses. Furthermore, researchers are not always able to monitor daily decisions which might be contrary to research designs, methodology, and protocols. In spite of this reality, decisions regarding this research study have not adversely affected the results of this study. Therefore, it was concluded that implementing the intensive on-line technology intervention for ELL Hispanic students in middle and secondary classrooms is feasible and can be valuable.

Implications

While increases in reading ability were significant, a gap between measured levels and the academic level demanded of secondary students remains. Participants increased in their ability to interact with text by one-three grade levels above where they started. This indicates acceleration of progress. However, there is still a two-six grade level gap between functional reading level and the level of proficiency desired for their grade of placement. How much progress might have been made if opportunity of access to the program was doubled? Would the gains have doubled? We cannot tell. The advantage of the program is that it meets individuals where they are in terms of reading level of text for practice.

By working with culturally appropriate text at their functional reading level, students were able to demonstrate gains while experiencing literature that may not otherwise have been available to them. The program also provided a context optimal for

individual opportunistic learning afforded by “comprehensible input” for learning (Cummins, 1992; Krashen, 1995; Elley, 1997) of vocabulary and syntax from appropriate reading level text. These findings agree with the literature that active practice time is a good index for opportunity to learn, and commonly relates to degree of skill improvement (Berliner, 1979; Stallings, 1980). Informal student reports indicated they enjoyed working with the online program. One teacher participant (personal communication, May, 2006) commented that the program built student confidence for attempting additional academic work.

Suggestions for Further Research

As with any research study, replication is important. The original request made of the district was to commit to use of the program for one hour, three times a week. The environment only allowed 45 minutes, three days a week. Future studies might explore increasing the exposure time to the program. This could be done by increasing the number of days of access per week or increasing the minutes per day of access. Also, we highly recommend either trying the program with a larger number of students, or keeping track of the program over multiple years to ascertain the reliability of our results.

As the program is available online, the possibility of increased access by accessing computers outside of school (public library) could be explored. If students had the financial means to have a computer with internet connections at home, access to the program could also be increased there.

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Appendices

Appendix A

Assessments and Materials Used

RPTE (Reading Proficiency Tests in English)

www.tea.state.us

Woodcock Muñoz Language Survey- Revised

www.riversidepublishing.com

Readingsmart online

www.ESLreadingsmart.com

Appendix B

Other Resources

Total Physical Response

<http://www.sil.org/lingualinks/LANGUAGELEARNING/WaysToApproachLanguageLearning/TotalPhysicalResponse.htm>

Suggestopedia

<http://www.griffith.edu.au/school/lal/japanesemain/private.kaz.suggestopedia.html>

Realia

<http://www.learnnc.org/reference/realia>