

Effectiveness of Community Volunteer Reading Intervention

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Most children have a voracious ability to learn languages. Many researchers believe that language development begins as an auditory process when children are very young, through which early literacy skills are learned before the ability to read and spell is developed (Bowman & Trieman, 2004). However, many students today have failed to grasp the fundamentals of reading and literacy at an early age. Regardless of whether the cause stems from a failure in the school system or issues with learning English as a second language, these “at-risk” students often possess a higher probability for behavioral and learning challenges in the context of future social behaviors and academics.

Poor literacy rates in students are a nationwide phenomenon. As Wilson asserts, by 1998, 38% of fourth graders have not achieved even a very basic level of reading in national literacy tests (Wilson, 2003). Furthermore, 60% of all students in grades 4, 8 and 12 did not score a level of proficiency on the national literacy tests, underscoring an alarming rate of inadequate reading skills. The ability to acquire and achieve a standard level of literacy during school years is essential for future success in students. In addition, compared with competent reading peers, the challenges of developing fluency and advancing comprehension broaden as deficits in basic reading and decoding skills increase. Known as the “Mathew Effect”, the reading divide and consequent life opportunities afforded through reading skills expands as the “poor

readers” become poorer, while the “rich readers” become richer (Stanovich as cited in Lane & Menzies, 2003). Strong literacy skills, along with continued education, are often associated with a higher income status and enhanced future careers.

Intervention models from schools and other educational resources have taken root to challenge the reading divide. These methods include reading recovery (a method of teaching using a child’s individual reading and writing strengths), holistic language (an approach that immerses student in literacy through labeled materials and persistent everyday language use), and directed one-to-one individual instruction. Sherman asserts that a holistic whole language approach is sufficient for children to develop and learn language naturally (Sherman, 1998). It is believed that under holistic language, simply immersing students in a “print” loaded environment that includes child-appropriate books, posters, labels, etc., facilitates a capacity to read through osmosis and immersion in the adopted language. One-to-one and small group intervention models by trained reading professionals, such as Reading Recovery, have also emerged in schools as effective remediation methods (Invernizzi et. al., 1997). Reading Recovery is an individualized process that encourages literacy development through utilization of a student’s strengths by employing ability-appropriate materials, building confidence, and mastery of articulating ideas versus mechanics (i.e. being able to write their ideas with their own words, irrespective of correct spelling or grammar.)

Intervention models currently employed by many schools have resulted in positive outcomes for students, who have made measurable gains in academic performance. However, while those resources are positively associated with increased achievement, they are also fairly expensive and cost-prohibitive for many fiscally

challenged schools. For many underserved and cash-strapped schools, fiduciary concerns mean limited services are available for students; as a consequence, many schools are increasingly relying on volunteers to supplement or even supplant paid literary resources—it is becoming an increasing phenomenon in schools to utilize unpaid volunteers, particularly in the role as literacy “tutors”. In fact, starting in 1996 U.S. government policy began to officially encourage the use of community volunteers as reading tutors and this policy was further endorsed by the Bush administration in 2001 as the government backed the use of retired teachers as volunteer paraprofessionals (Torgerson & King, 2002).

Effective Reading Practices and Methods

The actual instructional methods used by any instructor play a fundamental role in developing students’ literacy skills. Student measures of success are based on constructive reading methods and ideology that often address children’s individual needs. Disparate practices exist and not one has proven to be the quintessential best practice. According to the NICHD, varying models have similar fundamental themes, but such literacy methods can be divided into three major areas: alphabetics, fluency, and comprehension (NICHD, 2000). Each component centers on varying degrees of literacy development. Bowman and Treiman make further delineations by dividing early literacy into two stages: a pre-alphabet stage called logographic and alphabetic (Bowman & Treiman, 2004). Logographic literacy skills emphasize the relationship of colors and shapes to letters, but not the actual recognition of letters themselves (for example, identifying the label “Toys R Us” based solely on the colors of the letters).

Alphabetics—Phonemic Awareness and Phonics

Alphabetic reading methodology belies holistic or whole language reading approaches. According to the NICHD, alphabets or phonics based instruction has gained acceptance with respect to the process of reading acquisition and has been shown to be effective in helping students to learn (NICHD, 2000). Berg and Stegelman affirm that phonics is a necessary tool that aids in transitioning from an oral vernacular to a written one (Berg & Stegelman, 2003). The alphabetic principle is bifurcated into phonemic awareness and phonics—both are interconnected principles.

Literacy development initially requires an awareness of the sound structure of a language and understanding that spoken language is composed of individual sounds or phonemes. Phonemic awareness is understanding and possessing the ability to manipulate these sounds. Phonics represents the relationship between phonemes and the written print (graphemes) in a predictable pattern. Phonics instruction within the context of explicit spelling instruction is found to be effective (Invernizzi et. al., 1997). The Howard Street Training Program also employed contextual word study that emphasized phonics skills such as rhyming and segmentation, yet few literacy programs have included explicit and directed phonics teaching (Perney et. al., 1990).

Fluency

Fluency can be considered an interim step between phonics acquisition and the next step in literacy development—comprehension. Fluency is the ability to read quickly and accurately, but does not necessarily include understanding of what was read (Greenwood et. al., 2003). The role of fluency in the language process represents different conceptualizations; however current ideology recognizes fluency as a rapid interpretation and recognition of words and punctuation (NICHD, 2000). Being able to

quickly identify words and group them is essential to free up other cognitive processes and therefore improve the comprehension process. Two primary practices exist in teaching fluency: “procedures that emphasize repeated oral reading practice or guided repeated oral reading practice and all efforts to increase the amounts of independent or recreational reading that children engage in, including sustained silent reading” (NICHD, 2000, p. 194). Greenwood et. al. depict the varying success of fluency instruction methods: silent reading was shown to have a long-term positive effect, while reading aloud showed diminishing positive effects on reading skills (Greenwood et. al., 2003).

Comprehension

The capacity for comprehension is the ultimate goal for literacy development. Comprehension is the ability to read for meaning and is a complex strategic process that integrates higher-order skills and vocabulary learning (NICHD, 2000). Synthesizing themes and ideas, evaluations, noting details, and making inferences are all examples of abstract and complex comprehension skills (Sherman, 1998). Teaching these skills requires vocabulary instruction and practicing comprehension tasks. Varying frameworks for learning comprehension exist, though as Ediger points out, basal reading is one that emphasizes a rigid structure of teaching and facilitates learning comprehension skills in a scaffold process (Ediger, 2002). The NICHD identifies five strategies for teaching vocabulary (explicit instruction, implicit instruction, multimedia exposure, capacity methods, and association methods) and also explore comprehensions methodology, including teaching story structure, using graphic or visual organizers, question answering, cooperative learning, and summarization (NICHD, 2000). Strategies vary and the issue of teaching comprehension to students is

complex, however it is important to maintain an objective perspective and understand that comprehension instruction needs to be an individualized process that is difficult to generalize to every child.

Literacy ideology in the past has placed heavy emphasis on early intervention (Cassidy & Wenrich, 1999). Students of any age have the capacity to learn literacy skills. However, it is believed that younger students have greater capacity to make superior gains compared to older learners. In addition, English Language Learners (ELL) is another issue, where discourse on effective methods focus on literacy acquisition in the native language and in English. However, both contextual issues of early intervention and ELL are based on individual circumstances and are difficult to generalize the greater population.

The Role of Volunteers in Education

Meeting the distinct challenges of teaching literacy to such a wide array of students is a difficult task. Often times, schools are unequipped or strapped of resources in order to be able to meet all their students' needs. In response to the growing need, schools have tapped other communities to help their students.

Paraprofessionals

Paraprofessionals are a highly underutilized source of services that can cater to students' needs for individualized attention. Such paraprofessionals represent a quasi-teacher approach—they often are highly qualified and trained persons, yet donate their services for free or for a minimum of costs. Paraprofessionals as specialized teachers are a recognized method of instruction adjunct to classroom teaching (Ediger, 2002).

Many retired teachers have become paraprofessionals as they have the expertise, educational training, and most importantly the desire to provide help for at-risk students. According to Ediger (2002), these paraprofessionals can be most effective in catering to small group or one-to-one instruction with students (Ediger, 2002). Working in conjunction with classroom teachers, retired teachers act as partners in teaching: classroom teachers can primarily be responsible for evaluating students as they have the most intimate and direct contact with the children, while the paraprofessionals can use different forms of instruction, including basal reading and individualized reading. Basal reading is a common form of class-room wide instruction that ensures all students achieve a minimum of literacy skills through iterative teaching of story passages that are slightly more difficult than a child's actual reading level (Cassidy & Wenrich, 1999). Individualized reading respects each individual student's reading ability and content/subject preferences—it emphasizes teaching story passages that students choose and are ability appropriate. Though retired teachers are an asset for classrooms, they are limited in scope as a consistent resource.

Community Volunteers at the National Level

In 1996, former President Bill Clinton sought to develop national literacy volunteerism and established the America Reads Challenge (ARC) as part of a more expansive national service program called AmeriCorps (Wilson, 2003). As a national program, AmeriCorps encourages American citizens to participate in year-long civic engagement contracts, which in turn remunerate “Corps” members with a living allowance and an education stipend. ARC members specifically focus on helping students learn to read proficiently by grade 3 through one-to-one or small group

instruction and Corps members meet with students at least once a week, during and after school hours. ARC members received training in literacy methods, but are not trained specialists or educators. The ARC program in Mississippi found that members with trained supervisors and structured tutoring sessions were more effective in delivering services (Wilson, 2003).

According to Elbaum et. al. (2000), intervention models vary across a broad spectrum with respect to how volunteers are actually utilized (Elbaum et. al., 2000). The researchers affirm that intervention models, in which trained, non-professional volunteers were used, proved to be highly effective in delivering quality instruction and helping students make measurable literacy gains. Their meta-analysis of varying volunteer intervention programs found that on average, students who received one-to-one instruction performed at a level 2/5 of a standard deviation higher than the average level of the comparison group, corresponding to an increased shift in performance. Tutored students moved from 50 to 65 percentile on a standardized measure of success (Elbaum et. al., 2000).

Parents as Volunteers

Parents have long been one reliable and primary source of these non-professional volunteers. In a study conducted by DeCusati et. al., researchers found that young children benefited not only from supplemental literacy help from parents, but also responded positively to having a parent involved (DeCusati, 2004). Children were separated into two groups—one received parent-assisted literacy intervention, while the other group did not. One hundred percent of children who had their parents involved felt “happy”, while only 85% of students whose parents did not volunteer were “happy”.

DeCusati et. al.'s research supports volunteerism having a positive correlation with reading skills; however, it also raises the notion of whether the utilization of an invested volunteer produces any effects on a child's reading behaviors (DeCusati, 2004).

Qualities of Volunteers

Community volunteers have shown to be effective in delivering ESL instruction to adult students. In a study by Carter and Wu, volunteers at a YMCA in Princeton, New Jersey were all judged to be “excellent” and characteristics of volunteers were examined (Carter & Wu, 2000). The study found that a majority of volunteers were highly educated (most had an undergraduate degree, with almost half possessing a master's or a doctorate). The majority were female and aged from 19 years old to 70 years old. Forty percent of them had some form of teaching background, yet almost none of them had any formal training in the volunteer program. Over the long-term, most volunteers stayed with the program and retention was bolstered through on-going volunteer events to establish an inclusive environment. The population of volunteers examined does not lend itself to great external validity as the pool of community volunteers would not be reflective of an average population—Princeton would most likely have a very educated and highly motivated population.

Yet, Carter and Wu's research emphasizes that quality of volunteers is equally as important as training and support. Having pre-selected tutors who are highly motivated can improve the effectiveness of a literacy program. In addition to the success of many volunteer literacy programs, they have also been shown to be cost effective to schools, with an average cost of \$595 to tutor a child—significantly less than the cost of a trained professional (Invernizzi et. al., 1997).

Effective Utilization and Management of Volunteers

Volunteers as a component of many reading intervention models represent a portion of a successful program. Volunteers, with minimal instruction, have shown to be effective in delivering instruction. In one AmeriCorps program in Southeastern Michigan, students enrolled in the program saw an average increase of 1.5 grade levels in their reading, which is significantly higher than the average of normal readers during one school year (Moore-Hart & Karabenick, 2000). Furthermore, 71% increased one or more grade levels and 45% increased more than two grade levels. Over 99 students were measured with standardized tests over a three year period of time, which lends credibility to the success of volunteers as literacy tutors.

Various studies have shown that effective volunteers often had program training in literacy skills. The findings of Perney et. al. (1990) depicts the effectiveness of training and on-going support in one-to-one instruction (Perney et. al., 1990). Tutoring at the Howard Street Tutoring Program in Chicago has helped 60% of its students to make gains in their reading levels. These tutors had a reading specialist as their supervisor who monitored tutoring, spent several sessions with tutors in practice sessions, and were charged with planning tutor lessons. The program also devised a structured and organized framework for tutors.

Wilson also recognizes that supporting programmatic factors contribute to a successful program (Wilson, 2003). Irrespective of individual program differences, the ARC in Mississippi found that the following contributing aspects aided in students' increase in reading levels: the need for a trained supervisor, constant training and feedback for tutors, intensive and consistent tutoring, ongoing assessments, and

coordinated efforts with classroom instruction. Combined these components assist the tutor in their function as a literacy educator.

The volunteer program at YMCA Princeton also purports that long-term retention is another key element that fosters an inclusive environment for volunteers to remain committed to volunteering (Carter & Wu, 2000). Controlling for socio-economic factors, the number of tutoring sessions also positively affected the performance of students—over the long term, students who received more than 40 sessions in a school year were found to have significant increase in reading levels than those who received less than 40 sessions (Invernizzi et. al., 1997). However, little other quantitative data exists on the relevance of overall programmatic aspects and its impact on literacy achievement. Most research remains focused on student success in terms of student outcomes and their reading grade levels.

Hypothesis

YES Reading is a non-profit program located in the Peninsula of the Bay Area in California. Founded in 1999 and incorporated as a non-profit in 2002, their mission is to empower students through literacy by recruiting and training community volunteers to provide one-on-one reading support to struggling elementary and middle school students. YES Reading partners directly with public schools that serve socio-economically disadvantaged students and provide a results-oriented intervention for low-performing readers in grades Kindergarten through Eighth grade. Currently, the program has four different on-school sites across the Peninsula. On average, in 2004 YES Reading students improved one grade level after only thirty hours of tutoring. YES

Reading is committed to increasing the life opportunities of students by providing them with the ability and love to read.

Founded on many models of reading, YES Reading has grown to become an outcomes based literacy program. The YES Reading model involves a holistic approach to addressing student's needs. Teachers are involved in all aspects of the process and are critical in identifying appropriate students for the program, based on severity of needs and willingness to learn. The model also relies on a trained Site Director that staffs each site. The Site Director has experience in education, is trained in literacy methods, and is responsible for assessing students with a standard assessment tool when children are enrolled and exited from the program. As Elliot contends, researchers have recognized that a standardized measurement tool is required to demonstrate significant quality of scores used to measure young students (Elliot, 2000). Site Directors also serve as the consistent link between the community and the school; they maintain communication with teachers, parents, and school administration ensuring sustained effectiveness in students' progress.

Community volunteers are recruited by the Site Supervisor, trained, given ongoing support during tutoring sessions, and offered continual supplemental literacy trainings. Tutoring sessions follow a structured intervention curriculum devised by YES Reading staff and is individualized to each student's instructional level, taking their strengths and weaknesses into account. Each curricula lesson emphasizes different aspects of phonemic awareness, phonics, fluency, vocabulary development and comprehension. Students are seen twice a week, for 40 minutes each session.

This research hypothesizes that the YES Reading curriculum and intervention model is effective in helping at-risk students positively increase their grade level in reading. The null hypothesis postulates students in the YES Reading curriculum will not increase their reading levels.

Methodology

Selby Lane School is a school in the Redwood City School district, with 656 students enrolled in grades K—8 for the 2005-06 school year, where 88% of the students are of Hispanic descent. The school is considered a Title 1 school, a designation in which the majority of students is socio-economically disadvantaged and qualifies for free or reduced meals. Furthermore, many students are also considered English Language Learners, where nearly 57% of students did not qualify as “proficient” in the English language. Overall, the school is an underperforming school, which has scored below average in their state level tests—in 2004, the school’s Academic Progress Index (API), a measure of school academic performance on a scale from 200 to 1000, was 678 and below the national target of 800. It maintained a statewide rank of 3 (1 being poor and 10 being excellent performing), where similar schools have a typical rank of 7. Students at Selby Lane School have many challenges, ranging from low SES to language barriers to overcome; however, YES Reading fills a niche to help students achieve academic gains in their reading.

During the 2005-06 school year, 52 Selby Lane School students in grades 1 through 6 were enrolled in the YES Reading program. Students were selected into the program after teachers identified students at the beginning of the school year who are considered “struggling readers” and not at grade level reading, basing their decision on

previous year's school performance, their initial informal assessment of the students, and general behaviors in the classroom.

Measurement Tools

The primary assessment tool for reading levels is the school based Scholastic Reading Inventory (SRI). Students in grades three and above are assessed with this school-based norm-referenced test, which produces a numeric scale of a student's reading ability, ranging from 100 to 1200 and correspond to grade level equivalents (i.e., 600 corresponds to roughly a 6th grade level reading ability). Students unable to achieve a score on the SRI are given a designation of Beginning Reader (BR), which is equated a score of zero. The school schedules the computer administered SRI which measures students' reading comprehension, assessing their reading levels and tracking students' reading growth over time.

Sampling

The study sample will be composed of two groups: an experimental group and a control group matched according to their initial SRI scores for the 2004-05 school year. For the purpose of this study, only students in grades 3 through 6 and enrolled in YES Reading will be considered for an experimental subgroup, since evaluation data for lower grade students did not exist. Students for the control group were matched with a student from the experimental group and selected based on their comparative 2004-05 SRI scores. A compiled list of all 2004-05 SRI scores for third through sixth graders was gathered from the school principal. For each student in the experimental group, a control student was randomly selected from the same grade and with similar SRI scores.

There were a total of 27 matched pairs of students, with ten 3rd grade pairs, five pairs of 4th graders, 9 pairs of 5th graders and three pairs of 6th graders. Of the 27 students in the experimental subgroup, 96% were Hispanic while 4% were Caucasian and 52% were male versus 48% female. In the control group, 96% of the students were Hispanic and 4% were Caucasian; 41% were male while 59% were female.

Operational Variables

This research uses a quasi-experimental design, an assembly of historical data where students were given an experimental treatment through YES Reading tutoring. Effectiveness of the YES Reading tutoring will be quantified through an initial SRI measurement and the final SRI score. Independent variables include students' grade levels in the 2005-06 school year, 2004-05 California Standardized Test (CST) scores in language arts and language level scores (which outline a student's proficiency in English), gender, and ethnicity. Ethnicity and gender were coded as nominal variables—ethnicity as “Hispanic” or “White” and gender as “Male” or “Female”. Participation in the YES Reading program was coded as a dichotomous variable, either “Yes” or “No”. SRI, CST and LL scores were coded as interval scale variables. Utilizing the aforementioned quantitative measures, we will attempt to analyze the effectiveness of the YES Reading tutoring model.

Results

Employing a matched pair sampling, the alternative hypothesis is stated as the experimental group showing an increase in difference of means, in which the initial and final SRI scores were compared between the experimental and control groups. We hypothesize that students given tutoring in YES Reading will show greater performance

on their final SRI scores than the control students. Bivariate procedures, calculated means and standard deviations for the matched pair sample were employed to analyze the resulting data. Given the results of the bivariate analysis, repeated linear regressions were performed to determine goodness of fit for the independent variables (gender, ethnicity, grade level, CST and LL scores) and to assess co-linearity amongst the variables.

Analysis

The initial two sample t-test results reveal a strong negative association between students in the experimental group and the control group, in which the experimental group showed preliminary lower scores (students in the experimental group had an average 37.704 point lower difference). Table 1 outlines the 2 Sample T-Test results. Differences in the average mean score increased considerably as students in the experimental group showed diminished scores, with an average 104.815 points lower difference than students in the control group. Initial SRI scores showed a strong significance of 0.039 on a 2-tailed confidence interval, while final SRI scores had a significance of 0.016 indicating a greater level of confidence, indicating the t-test results are relevant. The differences in means contradict the current hypothesis—given students in the experimental group, those children would have showed increased measured gains than control students; however, the initial empirical analysis assumes rejecting the hypothesis. At a superficial glance the findings appear suspect, necessitating a linear regression to validate and corroborate the findings.

Table 1-2 Sample T-Test Results Between Experimental and Control Groups

		Paired Differences					T	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
					Lower	Upper			
Pair 1	BegSRI1 - BegSRI2	-37.704	90.347	17.387	-73.444	-1.964	-2.168	26	.039
Pair 2	FinSRI1 - FinSRI2	-104.815	211.749	40.751	-188.580	-21.050	-2.572	26	.016
Pair 3	LS1 - LS2	-6.240	35.979	7.196	-21.092	8.612	-.867	24	.394
Pair 4	LL1 - LL2	-.111	.801	.154	-.428	.206	-.721	26	.477

A subsequent linear regression using all the independent variables establishes the value of each variable's effect on the final reading score. As seen in Table 2, the initial SRI score and grade level showed the greatest statistical significance (0.001 and 0.048 significance respectively). Students' success on their initial SRI and their grade levels correlated as substantial predictors of increased scores on a student's final SRI score, in particular as for every one grade level up, students showed a 45 point rise in scores. The relationship addressed by the regression model is fairly strong, accounting for 47.1% of variance (adjusted $R^2=0.471$). Higher scores for students in higher grades are not surprising considering the SRI test is a measure of comprehension reading abilities and presuming older students developmentally achieved and/or developed abstract and critical thinking skills. As students mature, they often naturally develop those abilities to a certain degree through practice and have cognitively matured to handle such tasks. As such, younger students may not score as well on the tests of comprehension and understanding.

Table 2-Initial Linear Regression Results

Model	Unstandardized Coefficients		Standardized Coefficients	T	Sig.
	B	Std. Error	Beta		
1 (Constant)	251.772	167.804		1.500	.140
Beg SRI 56	.387	.105	.439	3.700	.001
Recoded YES Reading	-74.149	43.031	-.179	-1.723	.091
Grade Now	45.557	22.508	.234	2.024	.048
LS45	-.414	.492	-.184	-.841	.404
LL45	55.655	36.427	.334	1.528	.133
Recoded Sex	-42.963	43.269	-.104	-.993	.326
Recoded Ethnicity	-65.267	114.733	-.058	-.569	.572

Interestingly enough, participation in the YES Reading program demonstrated a negative impact on final SRI scores—on average students in the program scored 74 points **less** (B coefficient= -74.149) than students not in the program. The negative relationship contradicts the initial hypothesis as YES Reading students actually scored worse than control group students. Though not statistically significant (Sig.=0.091), the outcome reflects a negative association and unstable conditions within the regression model which requires further investigation.

Importance for Initial Question

Repeated linear regression is applied to delineate possible multi-co linearity effects amongst the independent variables. Upon closer inspection, being in the experimental group alone imparts a highly negative impact on students (B coefficient=-123.257 and significance=0.023). Including initial SRI scores, we see that this factor is highly significant (significance=0.000) with a marginal positive effect (B coefficient=0.5), but most importantly the negative impact of the YES Reading factor has diminished (B coefficient is reduced to -84.234). In conjunction with results from the 2 sample t-test,

this finding is not surprising and corroborates the positive connotations of a student scoring well initially on a test.

Yet, taking scores into account, the experimental students still scored poorly. The introduction of sex as a factor reveals continued negative associations for YES Reading students, however the statistical significance of the experimental group is moderated to 0.078 with the experimental group factor still conferring a strong deleterious effect (B coefficient= -75.402), both of which are indicative of a possible collinear interaction. The combination of gender and the experimental group show interactions which strengthen a detrimental effect on final reading scores and in which both factors negatively change the outcome.

It is necessary to control for co-linear factors, since factors that are not exclusively independent could give false prediction results in the linear regression models. The effects of individual variables tend to be marginalized and masked when conditions for multi-collinearity exist. Furthermore, higher inflated errors are introduced into the partial slopes. Although multi-collinearity causes erroneous results, their effects can be controlled and reduced in linear regression model. Controlling for the possibility of multi-collinear variables, a dummy variable incorporating gender and the experimental group (isex = sex * YES Reading) factors is introduced into the final linear regression model. The final model results are summarized in Table 3 and 4.

Overall, this new model accounts for 45% of the variance (adjusted $R^2=0.448$). In spite of the low statistical significance (sig.=0.190), the interaction variable (isex) reveals a positive impact on students' scores (B coefficient=109.7). The individual gender and YES Reading factors conversely showed marked decreases, with partial

slope coefficients of -125.819 and -127.284 respectively. The strong increase in the interaction variable, coupled with the decrease in each independent variable indicates a strong association in the interaction between gender and the experimental group. Being a male in the YES Reading program leads to lower reading scores than for any other combination of factors.

Table 3-Final Linear Regression Model Summary (a)

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.698(a)	.487	.448	155.005

a Predictors: (Constant), Recoded YES Reading, Recoded Sex, Beg SRI 56, isex

Table 4-Final Linear Regression Results (a)

Model	Unstandardized Coefficients		Standardized Coefficients	T	Sig.
	B	Std. Error	Beta		
1 (Constant)	364.229	48.124		7.569	0.000
BegSRI 56	0.525	0.088	0.595	-2.070	0.043
Recoded Sex	-125.819	60.768	-0.304	-2.070	0.043
Isex	109.696	82.561	0.241	1.329	0.190
Recoded YES Reading	-127.284	57.105	-0.307	-2.229	0.030

a Dependent Variable: Mid SRI 56

Several theories can possibly explain the strong relationship between gender and the experimental group. However, one predominant interpretation of the results leads the researcher to suspect that additional conditions exist for males in the YES Reading program. Examining additional demographic data for YES Reading students reveals the majority of male students have a Student Success Team (SST) or Special Services designation. An SST is a group of people at the school who utilize a problem-solving approach in an attempt to help students to be more successful in school, at home, and in the community. It is a collaborative approach involving family, teachers, the principal, and any other school resources (including resource specialists, non-profit groups, etc.). Often children identified for a SST have behavioral, academic or social challenges

which need to be addressed. Special services indicate a student who is receiving additional help from traditional Special Education educators in areas of speech, reading, math, behavior, etc.

In the YES Reading program, there were 7 out of 27 students given an SST/Special Services designation for a total of 26%. Comparison data for the control group is unavailable, therefore it is currently impossible to determine if this factor is altering the effects of the other independent variables. Though, it appears that the SST is a major factor, the relationship between gender and the experimental group is still unclear—do boys with SST's perform worse in the experimental group than the control group? Further research should be conducted to demarcate the differences and effects of each variable.

Directions for Future Research

The limiting factors of the current research are the selection of the control group students and number of independent variables, which should be addressed in future research in order to better determine a better association amongst all the factors. The true influence of each independent variable is difficult to assess without a more appropriately selected control group. The current control group students were simply selected based on initial reading scores. While this is effective, it ignores other key issues affecting reading scores, including socio-economic status, behavior and cognitive challenges, and more. If possible, control group students should have been selected from a pool of students who qualified for YES Reading, but were not enrolled into the program—in other words, students who were wait listed to enroll in the YES Reading program. Qualifications include teacher/parent recommendations, language proficiency,

informal teacher assessments, and assessments conducted by YES Reading staff. An extensive pre-screening process could control for extraneous factors and reduce multicollinearity effects. Compilation of other independent variables can also increase delineation of the value of each variable's effect. The SST/Special Services designation is probably the most essential factor that should be obtained in future research. During repeated linear regression analysis, it was evident that the SST could impart higher errors in the analysis and should be controlled.

Implications of Research

In spite of the research hypothesis being rejected, the analysis has shown important implications for schools. The intention was to show the relationship between community volunteering and literacy scores, in which individual attention from volunteers can increase students' reading abilities. Schools could take advantage of this knowledge by utilizing free existing resources from the community to help their students achieve academic success.

However, according to the results revealed in this research, community volunteering was not a major factor in success. In theory, it is a student's behavior and cognitive challenges that affect their literacy abilities, although community volunteering could possibly mitigate those issues. If this is the case, volunteers could still be an immense resource for cash-strapped schools that are forced to contend with increased academic accountability. With further research, hopefully we will be able to address this issue more in depth.

Appendix A)—Descriptive Statistics

In Program #			NOT In Program #		
Total	27		Total	27	
Male	14	52%	Male	11	41%
Female	13	48%	Female	16	49%
Hispanic	26	96%	Hispanic	26	96%
White	1	4%	White	1	4%
Actual Grade # of pairs					
3	10				
4	5				
5	9				
6	3				

Appendix B)—2 Sample T-Test Results

Paired Samples Statistics

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	BegSRI1	274.44	27	234.992	45.224
	BegSRI2	312.15	27	233.431	44.924
Pair 2	FinSRI1	371.93	27	217.016	41.765
	FinSRI2	476.74	27	183.184	35.254
Pair 3	LS1	283.36	25	27.568	5.514
	LS2	289.60	25	35.723	7.145
Pair 4	LL1	2.04	27	.759	.146
	LL2	2.15	27	.770	.148

Paired Samples Correlations

		N	Correlation	Sig.
Pair 1	BegSRI1 & BegSRI2	27	.926	.000
Pair 2	FinSRI1 & FinSRI2	27	.450	.018
Pair 3	LS1 & LS2	25	.377	.064
Pair 4	LL1 & LL2	27	.451	.018

Paired Samples Test

		Paired Differences					t	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
					Lower	Upper			
Pair 1	BegSRI1 - BegSRI2	-37.704	90.347	17.387	-73.444	-1.964	-2.168	26	.039
Pair 2	FinSRI1 - FinSRI2	-104.815	211.749	40.751	-188.580	-21.050	-2.572	26	.016
Pair 3	LS1 - LS2	-6.240	35.979	7.196	-21.092	8.612	-.867	24	.394
Pair 4	LL1 - LL2	-.111	.801	.154	-.428	.206	-.721	26	.477

Appendix C)—Initial Linear Regression Results

Descriptive Statistics

	Mean	Std. Deviation	N
Mid SRI 56	410.86	208.702	58
Beg SRI 56	273.10	236.604	58
Recoded YES Reading	.53	.503	58
Grade Now	4.10	1.071	58
LS45	256.62	93.094	58
LL45	1.72	1.254	58
Recoded Sex	.4828	.50407	58
Recoded Ethnicity	.9655	.18406	58

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.732(a)	.536	.471	151.808

a Predictors: (Constant), Recoded Ethnicity, Recoded YES Reading, Beg SRI 56, Recoded Sex, LL45, Grade Now, LS45

ANOVA(b)

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	1330424.401	7	190060.629	8.247	.000(a)
	Residual	1152290.495	50	23045.810		
	Total	2482714.897	57			

a Predictors: (Constant), Recoded Ethnicity, Recoded YES Reading, Beg SRI 56, Recoded Sex, LL45, Grade Now, LS45

b Dependent Variable: Mid SRI 56

Coefficients(a)

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	251.772	167.804		1.500	.140
	Beg SRI 56	.387	.105	.439	3.700	.001
	Recoded YES Reading	-74.149	43.031	-.179	-1.723	.091
	Grade Now	45.557	22.508	.234	2.024	.048
	LS45	-.414	.492	-.184	-.841	.404
	LL45	55.655	36.427	.334	1.528	.133
	Recoded Sex	-42.963	43.269	-.104	-.993	.326
	Recoded Ethnicity	-65.267	114.733	-.058	-.569	.572

a Dependent Variable: Mid SRI 56

Appendix D)—Repeated Linear Regression Results

Regression 1—Coefficients(a)

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
1 (Constant)	476.741	38.691	-.297	12.322	0.000
Recoded YES Reading	-123.257	52.923		-2.329	0.023

a Dependent Variable: Mid SRI 56

Regression 2—Coefficients(a)

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
1 (Constant)	310.274	41.386		7.497	0.000
Recoded YES Reading	-84.234	42.187	-.203	-1.997	0.051
BegSRI 56	0.533	0.090	0.604	5.943	0.000

a Dependent Variable: Mid SRI 56

Regression 3—Coefficients(a)

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
1 (Constant)	339.644	44.738		7.592	0.000
Recoded YES Reading	-75.402	41.962	-0.182	-1.797	0.078
BegSRI 56	0.526	0.089	0.596	5.936	0.000
Recoded Sex	-66.462	41.486	-0.161	-1.602	0.115

a Dependent Variable: Mid SRI 56

Regression 4

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.698(a)	.487	.448	155.005

a Predictors: (Constant), Recoded YES Reading, Recoded Sex, Beg SRI 56, isex

Coefficients(a)

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
1 (Constant)	364.229	48.124		7.569	0.000
BegSRI 56	0.525	0.088	0.595	-2.070	0.043
Recoded Sex	-125.819	60.768	-0.304	-2.070	0.043
isex	109.696	82.561	0.241	1.329	0.190
Recoded YES Reading	-127.284	57.105	-0.307	-2.229	0.030

a Dependent Variable: Mid SRI 56

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