



## **Striving Readers Study:**

# **Targeted & Whole-School Interventions – Year 4**

### **Authors**

Jennifer Hamilton  
Allison Meisch  
Eva Chen  
Priscilla Quintanilla  
Pauline Fong  
Karen Gray-Adams  
Ian Petta  
Nancy Thornton

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Prepared for:  
U.S. Department of Education

Prepared by:  
Westat  
1600 Research Boulevard  
Rockville, Maryland 20850-3129  
(301) 251-1500

**Westat®**



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# Executive Summary of Findings: Year 4 Implementation and Impact

## A. Project Overview

This report summarizes the results of the Newark, NJ, Striving Readers program for project Years 1, 2, 3, and 4. The Striving Readers Grant addresses the unmet needs of middle school students reading 2 or more years below grade level and provides professional development for teachers in all core content areas to help them learn about and use more effective literacy strategies. Nineteen middle schools in Newark are participating in the U.S. Department of Education Striving Readers study. Two components of the project are being evaluated: a targeted intervention and a whole-school intervention.

## B. Targeted Intervention

Scholastic's READ 180 Enterprise Edition was chosen to be the targeted intervention and replaced the core language arts curriculum for targeted students in the treatment schools. READ 180 directly addresses the individual needs of adolescents reading below grade level by using adaptive and instructional software, high-interest literature, and direct instruction. Teachers received training on all aspects of the READ 180 curriculum, from preparation to implementation and evaluation. In addition, teachers received training on using student data for differentiated instruction and instruction on interpreting READ 180 data reports.

### B.1 Description of Schools and Students in Targeted Intervention

The schools eligible to participate in the Striving Readers program were randomly assigned to either the treatment or a control condition in May 2006. No classroom- or student-level random assignment was involved. Eligible middle schools were identified based on the following criteria:

- Be Title I eligible
- Serve a minimum of two grades (from 6, 7, 8)
- Not already using READ 180

- Be categorized as “in need of improvement” under the No Child Left Behind Act
- Serve a minimum of 25 eligible students

These criteria ultimately resulted in a pool of 19 schools for randomization. Ten schools were randomly assigned to the treatment group.

Students were identified as eligible based on their score on the reading subtest of the New Jersey Assessment of Skills and Knowledge (NJASK). In Year 4, 1,070 students participated in the intervention. Of those, 577 attended treatment schools and 493 attended control schools. Table A shows the distribution of these students by select demographics and by treatment group.

**Table A. Characteristics of students in the targeted intervention in Year 4**

<b>Number (column %)</b>	<b>Students in treatment schools</b>	<b>Students in control schools</b>	<b>All targeted students</b>
Total number of students	577 (54%)	493 (46%)	1,070
Average no. of students per school	57.7	54.8	56.3
<b>Grade</b>			
6th grade	35%	38%	36%
7th grade	34%*	32%	33%
8th grade	31%+	30%	30%
<b>Gender</b>			
Male	60%	63%	61%
Female	40%	37%	39%
<b>Status</b>			
Economically disadvantaged	62%▪	61%▪	62%▪
English language learners (ELLs)	15%	11%	13%
Special education	46%	42%	44%
<b>Race/ethnicity</b>			
African American	53%	57%	55%
Hispanic	43%	41%	42%
Caucasian	1%	1%	1%
Other	2%	1%	1%

\*Two years of exposure. +Three years of exposure.

▪ The economic status was not provided for 322 students (178 treatment students and 144 control students).

## B.2 Summary of the Targeted Intervention Implementation Findings

To determine the degree of fidelity to READ 180, multiple components were evaluated for each READ 180 teacher. These components are training, class size, ongoing student assessments, and instructional software. An overall implementation summary score was developed for each school in Year 4. Table B provides each school’s score for the multiple components of the targeted intervention and an overall implementation score.

**Table B. Average school-level summary scores for implementation in Year 4**

Treatment School	Professional Development*	Class size	Ongoing Student Assessment	Instructional Software Use	Average score	Summary Implementation scores
School 10	–	4	4	3	3.7	High
School 5	–	4	4	2.5	3.5	High
School 4	–	4	4	1.5	3.2	High
School 17	–	4	4	1.5	3.2	High
School 6	–	4	4	1	3.0	Moderate-to-High
School 8	–	4	4	1	3.0	Moderate-to-High
School 13	–	4	4	1	3.0	Moderate-to-High
School 14	–	4	4	1	3.0	Moderate-to-High
School 15	–	4	4	1	3.0	Moderate-to-High
School 16	–	4	4	1	3.0	Moderate-to-High

\*A summary score was not calculated for professional development due to a change in the professional development model.

Forty percent of schools achieved high implementation in all three components. The remaining 60 percent schools had moderate-to-high implementation. All of the schools fully implemented ongoing monitoring of student progress in reading comprehension and all were within READ 180 guidelines for class size.

## B.3 Summary of the Targeted Intervention Impact Findings

Based on analyses from the first 4 years of Striving Readers data, READ 180 had an overall significant effect in one area of literacy skill. After 2 years of exposure to READ 180, a significant effect in reading comprehension was observed for students in the treatment group. However, students with 1 year or 3 years of exposure exhibited the same level of achievement as students in control schools. These findings suggest that struggling adolescent readers who are two or more years below grade level in reading may need two years of exposure to the intervention before significant impacts can be observed; One year may not provide a high enough dose, and three years may be too

much. The analysis of the three-year impacts will be updated in a Year 5 report available from OESE in spring 2012.

Significant effects were also found for subgroups of students, as shown in Table C. READ 180 appeared to be particularly effective for special education students. Special education students with 1 year of exposure to READ 180 scored significantly higher on the Vocabulary subtest than control students. Special education students with 2 years of treatment scored higher than control students on the Comprehension subtest. Special education students with 3 years of exposure to READ 180 program performed significantly better on the Language Arts subtest than students in the control group. The positive impact in Vocabulary, Comprehension and Language Arts indicate that after 3 years, the literacy skills of students with more complex educational needs are improving as a result of the program.

Another subgroup that appeared to benefit from READ 180 was males. Male students with 2 years of exposure scored significantly higher on the Comprehension subtest; this significant finding also had substantial effect sizes (0.21). However, male students with 3 years of exposure did not demonstrate continued improvement in their reading comprehension.

African American students also showed positive effects in Comprehension after 2 years. This effect continued after 3 years of exposure. These findings concur with extant research indicating that African American students benefit significantly after exposure to the READ 180 program when compared to students that do not receive READ 180 (Scholastic Research and Validation, 2008; 2009).

Among Hispanic students, few significant effects were observed. Hispanic students with 2 years of READ 180 exposure scored significantly higher on the Language Arts subtest than the control group. None of the other findings were either statistically or practically significant, including effects after 3 years of exposure to the program.

**Table C. Summary of analysis findings by subgroups**

Analysis groups	Outcomes	Overall		Female		Male		African American		Hispanic		Special Education	
		ES	Sig	ES	Sig	ES	Sig	ES	Sig	ES	Sig	ES	Sig
1. One year of exposure	Attendance												
	Vocabulary												✓
	Comprehension												
	Language Arts												
2. Two years of exposure	Attendance												
	Vocabulary												
	Comprehension		✓			✓	✓					✓	✓
	Language Arts												
3. Three years of exposure	Attendance												
	Vocabulary												
	Comprehension							✓	✓				
	Language Arts											✓	✓

✓ Positive at either  $p < .05$  or effect size  $> .20$

## C. Whole-School Intervention

The goal of Newark Public Schools’ (NPS) whole-school intervention is to improve students’ ability to “read to learn” across multiple content areas. The whole-school intervention is thus designed to train teachers to better integrate different learning strategies within the district’s core literacy program for middle-grade students. To this end, the intervention provides professional development to bolster the literacy knowledge of teachers of grades 6, 7, and 8 in large-group settings and to provide direct coaching support during in-school visits. These professional development and support activities are conducted by experts from New Jersey City University (NJCU) and the National Urban Alliance (NUA). Using a train-the-trainers model, the RTCs support the implementation of both professional development approaches through their own large-group training and site-based demonstration lessons and coaching.

### C.1 Description of Schools and Teachers in Whole-School Intervention

The 19 schools participating in the targeted intervention are the same as those participating in the whole-school intervention. However, the whole-school intervention is not being evaluated with a randomized design, and so all eligible teachers in all 19 schools receive the intervention.

In Year 4, 337 teachers were eligible to receive professional development as part of the whole-school intervention. Of these, 138 were eligible for professional development provided by the NUA (teachers who taught *only* math, science, or social studies). Fifty-nine<sup>1</sup> other teachers were eligible for training from NJCU (teachers who taught *only* language arts). In addition, 140 teachers were eligible for both NUA and NJCU training. These teachers either taught both language arts and a content area subject (usually social studies), or they taught all subjects (usually special education or bilingual teachers).

Students in all 19 Striving Readers schools, across the 6th, 7th, and 8th grades, were exposed to the whole-school intervention.

## **C.2 Summary of the Whole-School Intervention Implementation Findings**

The summary scale was developed in Year 2 to describe how connected professional development inputs are involved in the whole-school intervention model was used again for Year 4. Table D provides each school's score for the multiple components of the whole-school intervention professional development—the group training sessions and the in-school coaching visits—for the NUA and the NJCU intervention models. In addition, an overall implementation score and level of implementation are calculated for each school in the study.

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<sup>1</sup> Includes 19 literacy coaches.

Table D. School-level summary scores for participation in whole-school intervention in Year 4

School	Implementation scores by component				Average score	Summary implementation scores
	NUA		NJCU			
	Large-group training	In-school coaching	Large-group training	In-school coaching		
School 1	1	4	3	4	3	Moderate-to-High
School 2	1	4	3	4	3	Moderate-to-High
School 3	3	4	2	4	3.25	Moderate-to-High
School 5	2	4	3	4	3.25	Moderate-to-High
School 6	2	4	2	4	3	Moderate-to-High
School 7	3	4	2	4	3.25	Moderate-to-High
School 8	2	4	2	4	3	Moderate-to-High
School 9	1	4	3	4	3	Moderate-to-High
School 10	2	4	2	4	3	Moderate-to-High
School 12	3	4	2	4	3.25	Moderate-to-High
School 13	2	4	2	4	3	Moderate-to-High
School 14	3	4	2	4	3.25	Moderate-to-High
School 15	3	4	1	4	3	Moderate-to-High
School 18	3	4	2	4	3.25	Moderate-to-High
School 19	3	4	1	4	3	Moderate-to-High
School 4	1	4	2	4	2.75	Moderate
School 11	1	4	1	4	2.5	Moderate
School 16	2	4	1	4	2.75	Moderate
School 17	1	4	1	4	2.5	Moderate
<b>Average</b>	<b>2.05</b>	<b>4.00</b>	<b>1.95</b>	<b>4.00</b>	<b>3</b>	<b>Moderate-to-High</b>

As Table D shows, no school achieved full implementation of all four components. However, 15 schools had moderate-to-high levels of implementation for the whole-school intervention. The remaining four schools all had moderate levels of implementation, taking into account all components of the whole-school professional development.

It should be noted that the Moderate-to-High average levels of participation are related more to the high levels of whole-school coaching than to high levels of teacher participation in the group training. Although attendance at large-group professional development training was poor, multiple in-school coaching visits were made to each individual school, offering teachers opportunities to learn the techniques taught at the large-group training in an individualized way.

### C.3 Summary of the Whole-School Intervention Impact Findings

All 19 Striving Readers schools were eligible to receive the whole-school intervention. As a comparison group, school-level data were collected for all other middle schools in the district. The

unit of analysis for this study was the school. Students in grades 6-8 who took the NJASK in the district were eligible and were included in school level data for the analyses.

After 3 years of implementation, results from the analysis of whole-school NJASK outcomes indicate no difference in performance levels between the whole-school treatment group and the comparison group on the Language Arts section of the state assessment. Low teacher participation in the large-group professional development training as well as high teacher turnover could potentially explain the lack of program impact.

# Introduction and Study Background

# 1

## 1.A District Overview

One of the oldest school systems in New Jersey, the Newark Public School (NPS) system dates back to 1676. Barringer High School in Newark’s North Ward is the third oldest public high school in the nation. Currently serving a student population of 40,500, NPS is also the largest school district in New Jersey. That student population is diverse: approximately 58 percent African American, 33.5 percent Hispanic, 7.5 percent Caucasian, and 1 percent Asian or other heritage. Approximately 10 percent of the students are English language learners (ELL), and 14 percent receive special education services. Analysis of district achievement data reveals that students in the middle grades are struggling in the area of language arts. In the spring of 2009 only 39 percent of 6th graders, 37 percent of 7th graders, and 52 percent of 8th graders were proficient on the state reading assessment.

The existing literacy curriculum for the middle grades uses the New Jersey Core Content Curriculum Standards for literacy instruction and incorporates research-based strategies from the National Reading Panel (2000) to bolster the acquisition of phonemic awareness, phonics, fluency, vocabulary, comprehension, and motivation. In the district’s existing curriculum, students have extended learning time; have the opportunity to read high interest, age-appropriate materials; and work in small groups to maximize cooperative learning. Daily reading instruction must be at least 90 minutes. For grades 6, 7, and 8, the literacy curriculum primarily emphasizes comprehension and vocabulary and uses the textbook, *The Language of Literature* (McDougal Littell, 2002). The curriculum also uses a number of supplementary materials, including the following:

- ***Bridges to Literature***—designed to maintain and build students’ comprehension through a reciprocal-teaching approach. The materials include a textbook, an assessment book, and a student workbook. The textbook contains a leveled reading series designed to meet the needs of delayed readers by providing them with accessible, high-interest, on-level instruction. The assessment book and *Bridges Skill Builder* workbook provide assessments, writing prompts, and revising and editing activities to enhance students’ literacy skills.
- ***Classroom-Leveled Libraries***—provide students with continued opportunities to read high-interest and age-appropriate materials that build vocabulary, fluency, and comprehension.

The literacy curriculum is designed to ensure that students learn the essential skills of listening, reading, speaking, reading, writing, and spelling. Furthermore, the goal of the curriculum is to enable students to become contributing members of society by helping them develop and expand their view of themselves and the world, as well as obtain necessary skills such as critical thinking, problem solving, and creativity.

### ***Adolescent Literacy in Context***

Numerous researchers have categorized adolescent literacy in the United States as being in a state of crisis (Fisher & Ivey, 2006; Jacobs, 2008; Kamil, 2003). Adolescent reading and writing skills are on the decline (Carnegie Council, 2010) and recent data from the National Assessment of Educational Progress (NAEP) show that 34 percent of 4<sup>th</sup> grade and 26 percent of 8<sup>th</sup> grade students in the United States are reading below the basic level (US Dept. of Education, 2010). Among the students in large cities, 46 percent of 4<sup>th</sup> graders and 37 percent of 8<sup>th</sup> graders are reading below the basic level (US Dept. of Education, 2010). These data indicate that large numbers of middle school students are at a significant disadvantage before reaching high school, placing these students at risk for poor academic outcomes. Moreover, students with poor literacy skills are more likely to drop out of high school or graduate without the basic skills needed to attend postsecondary education, succeed in the workforce, or act as an informed citizen (Carnegie Council, 2010).

This concern over the low literacy achievement of adolescents has focused the attention of educators, policymakers, and researchers on finding effective ways to intervene with struggling readers. Literacy intervention is often targeted towards students in the early stages of schooling; however, when students reach middle school, reading gets more complex as they are expected to read expository text across a variety of content areas, decipher complex passages, synthesize information, and form independent conclusions based on data (Carnegie Council, 2010). Recent testing shows that early performance and gains in literacy often dissipate as students move through middle school, indicating that early literacy intervention does not inoculate students against later literacy failure (Carnegie Council, 2010). These findings highlight a need to identify and implement effective, research-based interventions for improving the literacy skills of middle school students. Currently, the research base evaluating adolescent literacy interventions is limited, and there is little understanding of which interventions are likely to be effective (Slavin, Cheung, Groff, & Lake, 2008).

In response to the poor literacy achievement of middle school students as well as the dearth of high-quality research examining the effectiveness of middle school literacy programs, the U.S.

Department of Education awarded eight Striving Readers grants in 2005. The goal of these grants is to improve the literacy skills and achievement of struggling readers in middle and high school and to build a scientific research base for interventions that improve adolescent literacy skills. The grant has two parts: a targeted intervention and a whole school intervention. The targeted intervention uses a Randomized Control Trial design to test the effectiveness of an intervention (READ 180) on the subset of student with the poorest literacy skills, while the whole school intervention is designed to improve the literacy skills of all students by supporting the effective implementation of the existing district curriculum. Newark Public School District (NPS) was among the eight school districts to receive the grant. Scholastic’s READ 180 Enterprise Edition<sup>2</sup> was chosen to replace the district’s existing language arts curriculum for the targeted portion of the grant. READ 180 is designed to enhance reading and comprehension skills of struggling readers in the upper elementary, middle, and high school years. READ 180 was one of four middle and high school literacy curricula identified by Slavin and colleagues (2008) as having “moderate evidence” of effectiveness. Furthermore, the curriculum includes several of the strategies identified as effective including explicit vocabulary instruction, comprehension strategy instruction, the use of high interest or relevant reading materials, and the use of a mixed methods instructional mode (Slavin, et al. 2008; What Works Clearing House, 2008). The whole school intervention includes two professional development models delivered by New Jersey City University (NJCU) and National Urban Alliance (NUA). These developers offer large-group training for teachers on ways to effectively promote literacy in the classroom. The two developers also offer in-school coaching support to teachers.

## **1.B Description of the Intervention Models**

### **1.B.1 Targeted Intervention**

Scholastic’s READ 180 Enterprise Edition was chosen to replace the district’s existing language arts curriculum for targeted intervention.<sup>3</sup> READ 180 directly addresses the individual needs of adolescents reading below grade level by using adaptive and instructional software, high-interest literature, and direct instruction. READ 180 also includes an assessment component: the Scholastic Achievement Manager (SAM), which collects and organizes student performance data for supporting data-driven instruction.

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<sup>2</sup> READ 180 for NPS is a 3-year intervention. The instruction has remained the same for all four years of the study.

<sup>3</sup> A description of the existing district curriculum is provided in section 1.A.

The READ 180 instructional model provides a straightforward way to organize instruction and classroom activity. The instructional model consists of a 90-minute literacy block that begins and ends with whole-group, teacher-directed instruction (20 and 10 minutes, respectively). During the 60 minutes between the whole-group sessions, students break into three small groups that rotate among three stations (Figure 1).

**Figure 1. READ 180 instructional model**



During the first 20-minute session, the READ 180 teacher instructs the entire class of no more than 21 students. During the next 60 minutes, the students break into smaller groups of equal size, which proceed through the following three 20-minute rotations:

1. *Small-group instruction*—The teacher sits with this small group to provide direct and explicit instruction on reading comprehension strategies using the rBook.<sup>4</sup>
2. *Independent reading*:—Students enter a comfortable seating area where they read leveled paperbacks with the option of adding audio through headphones as modeled reading.
3. *Software use*—Nine topical CD-ROMs provide students with background knowledge and mental models through full-motion video. Students encounter a reading passage based on the video that is at the appropriate ability level of that student. After the video and passage, students proceed through three zones:

<sup>4</sup> In the commercial Scholastic model, the small group portion of the lesson is devoted to direct instruction using READ 180's rBooks only. However, in a modification to the standard curriculum, NPS has supplemented these rBooks with books from McDougal Littell. These materials are used for independent reading of leveled texts and for teaching the use of graphic organizers and specific vocabulary. The district opted to incorporate the McDougal Littell series in READ 180 classrooms as an additional resource for exposure to literature.

*Word zone*—Instruction for developing basic decoding skills

*Spelling zone*—Instruction in the acquisition and transfer of spelling patterns and sounds

*Success zone*—Assessment for comprehension, word recognition, and fluency

In the last 10 minutes of class, the teacher provides a whole-group wrap-up.

READ 180 was originally designed for one complete year of instruction. According to Scholastic, with the purchase of add-on materials, instruction can last up to 3 years. NPS is implementing READ 180 for 3 years and developed a pacing guide (Appendix A) in Year 2 that outlines each 3-week plan of instruction, with four stop points built in to analyze report data to determine differentiated instruction needs. The first 2 days of this time are spent on prereading activities, such as building a background in the subject area with anchor videos and previewing vocabulary. The next 6 days are spent on reading strategies, including teaching, practicing, and applying the main idea and details. Days 9 and 10 then are spent on reviewing and extending vocabulary, with Days 11–13 focusing on writing and grammar. Functional literacy is covered the last day before wrap-up.

### **1.B.1.1 Participating Schools, Teachers, and Students**

For the targeted intervention, eligible middle level schools in NPS were identified based on the following criteria:

- Be Title I eligible
- Serve a minimum of two grades (6, 7, 8)
- Not already using READ 180
- Be categorized as “school in need of improvement” (INOI) under the No Child Left Behind Act
- Serve a minimum of 25 eligible students

Based on these criteria, 20 schools were eligible to participate in the targeted intervention. These schools then were randomly assigned to treatment and control groups, with the treatment schools slated to receive the READ 180 curriculum. After the random assignment had taken place, two schools in the control group merged, leaving 10 schools in the treatment group and 9 schools in the control group. The 19 participating schools serve predominately minority populations and almost

half of the students (49 percent) are eligible to receive free and reduced meals. Table 1 shows demographic data from all grades at participating schools at the beginning of the first year of the Striving Readers intervention.

**Table 1. Demographic characteristics of participating Striving Readers schools (2006–2007)**

School	Grades served	No. of students	No. of teachers	% Asian	% African American	% Hispanic	% Caucasian	% Free & reduced lunch
School 1	K–8	506	44	0.2	96.0	3.8	0	70.0
School 2	K–8	319	30	0	97.5	2.2	0.3	32.0
School 3	PK–8	292	35	0	73.6	26.0	0.3	75.0
School 4	3–8	372	32	0	97.6	2.4	0	31.4
School 5	PK–8	446	45	0	78.5	21.5	0	68.6
School 6	K–8	602	48	0	47.7	52.2	0.2	44.0
School 7	K–8	790	66	1.6	30.8	65.7	1.9	39.7
School 8	PK–8	337	34	0	92.3	7.7	0	77.4
School 9	PK–8	594	49	0	45.1	43.9	10.9	49.2
School 10	K–8	349	31	0	95.1	4.9	0	37.8
School 11	5–8	753	50	0.9	21.0	77.0	0.8	56.7
School 12	K–8	572	56	0.2	97.7	2.1	0	45.5
School 13	PK–8	754	66	0.7	42.6	55.2	1.6	43.6
School 14	PK–8	515	45	0.2	46.4	53.2	0.2	48.0
School 15	PK–8	1041	71	8.7	70.2	13.6	6.6	28.5
School 16	PK–8	464	47	0	93.1	6.7	0.2	61.2
School 17	PK–8	776	56	0.1	29.6	68.4	1.8	38.8
School 18	K–8	776	56	3.5	11.0	83.6	1.9	31.4
School 19	PK–8	679	68	0	94.4	5.7	0.1	56.3
<b>Average</b>		<b>576</b>	<b>49</b>	<b>0.8</b>	<b>66.3</b>	<b>31.4</b>	<b>1.4</b>	<b>49.2</b>

READ 180 teachers in the treatment schools were selected by their school principals. When filling classroom positions in their schools, principals typically have control over whom they select for certain assignments. Thus, the principals selecting READ 180 teachers were following their typical placement procedures.

For students to be eligible for the targeted intervention in Year 1, they had to be enrolled in one of the eligible middle schools and be in grades 6, 7, or 8. Furthermore, students’ eligibility was based on their score on the reading subtest of the New Jersey Assessment of Skills and Knowledge (NJASK). In New Jersey, anyone scoring below a 200 is considered “partially proficient,” which is the lowest category possible. Scores from 200 to 249 are “proficient,” and scores above 249 are “advanced

proficient.” The following cut-off scores for student eligibility were set by the district, based on one standard deviation<sup>5</sup> from the norm:

6th grade = 198

7th grade = 186

8th grade = 192

In Years 2, 3, and 4 additional 6th graders were added to the sample. As in Year 1, the cut-off score of 198 was applied to the new cohorts of 6th graders. Transfer students without an NJASK score were not eligible to participate in the evaluation. Table 2 shows the number of students by program year and selected demographic characteristics.

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<sup>5</sup> As determined by NPS.

Table 2. Characteristics of students in the evaluation of the targeted intervention

Number (column %)	Students in treatment schools				Students in control schools				All students			
	Year 1	Year 2	Year 3	Year 4	Year 1	Year 2	Year 3	Year 4	Year 1	Year 2	Year 3	Year 4
<i>Total number of students</i>	708 (52%)	648 (53%*)	638 (55%)	577 (54%)	663 (48%)	584 (47%)	529 (45%)	493 (46%)	1,371	1,232	1,167	1,070
<i>Average no. of students per school</i>	78.7	64.8	63.8	57.7	66.3	64.9	58.8	54.8	72.2	64.8	61.4	56.3
<b>Grade</b>												
<i>6th grade</i>	37%	35%	35%	35%	36%	31%	35%	38%	37%	33%	35%	36%
<i>7th grade</i>	30%	36%*	32%*	34%*	35%	37%	30%	32%	33%	36%	31%	33%
<i>8th grade</i>	33%	29%*	32%+	31%+	28%	32%	35%	30%	30%	31%	34%	30%
<b>Gender</b>												
<i>Male</i>	57%	56%	59%	60%	55%	51%	55%	63%	56%	54%	57%	61%
<i>Female</i>	43%	44%	41%	40%	45%	49%	45%	37%	44%	46%	43%	39%
<b>Status</b>												
<i>Economically disadvantaged</i>	91%	59%	62%	62%▪	84%	57%	58%	61%▪	88%	58%	60%	62%▪
<i>ELLs</i>	6%	8%	11%	15%	8%	7%	9%	11%	7%	8%	10%	13%
<i>Special education</i>	39%	44%	48%	46%	40%	40%	39%	42%	39%	42%	44%	44%
<b>Race/ethnicity</b>												
<i>African American</i>	57%	57%	54%	53%	58%	54%	54%	57%	58%	55%	54%	55%
<i>Hispanic</i>	41%	41%	43%	43%	41%	44%	43%	41%	41%	43%	43%	42%
<i>Caucasian</i>	<1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
<i>Other</i>	<1%	1%	3%	2%	<1%	1%	1%	1%	<1%	1%	2%	1%
<i>Not identified</i>	-	-	-	1%	-	-	-	-	-	-	-	1%

\*Two years of exposure. +Three years of exposure.

▪ The economic status was not provided for 322 students (178 treatment students and 144 control students).

### **1.B.1.2 Professional Development Model and Ongoing Support**

Professional development and support of the targeted intervention are critical to implementation. Professional development has been offered to classroom teachers, literacy coaches, principals, technology coordinators, and Resource Teacher Coordinators (RTCs) to ensure all have a clear understanding of what is being taught and the strengths and challenges in the READ 180 program implementation. Professional development is provided by Scholastic and is supported through in-school coaching visits.

#### ***Teachers***

In Year 4, new teachers were invited to attend two large-group training days (5.5 hours each). Five teachers attended at least one day of training. Returning READ 180 teachers did not attend the training because the training is geared towards new teachers and they had attended in previous years. The amount of training declined from Year 1 (3 days; 16.5 hours) to Year 2 (2 days; 8 hours) and again in Year 3 (1 day; 5.5 hours). Table 3 provides more detailed information about hours of training by year and reasons for changes to the training model. In Year 3, Scholastic offered 1 day (5.5 hours) of large-group training. Only one READ 180 teacher (a teacher new to Striving Readers) attended this training. The other teachers new to READ 180 were not yet hired at the time of the training and, therefore, could not attend.

Consultants gave teachers appropriate background information on READ 180 and the research supporting its development. Teachers had opportunities to gain hands-on experience using the READ 180 curriculum and were trained to use Scholastic's tools to aid the implementation of the curriculum and management of their classroom. In addition, READ 180 consultants trained teachers on how to use assessment results to inform instruction.

READ 180 teachers receive ongoing classroom support in addition to the large-group training. Representatives from Scholastic's READ 180 program conducted these support visits on an as-needed basis in Years 1 and 2. Each of the nine treatment schools was visited at least once by a consultant from Scholastic in Years 1 and 2. In Years 3 and 4, teachers received classroom support from district RTCs. These visits consisted of providing technical assistance to teachers, monitoring the program, and ensuring that the model is being implemented correctly.

Overall, changes in the number of hours dedicated to training decreased from Years 1 to 3 of the grant but increased in Year 4. See Table 3 for changes in professional development over the four years and reasons for changes

### ***Literacy Coaches***

Literacy coaches are housed in each school in the district. In general, their role is to support classrooms teachers in all grades as they implement the district curriculum. Because literacy coaches are not supported by the Striving Readers grant, they did not have a specific role in the program. However, literacy coaches in the treatment schools have been strongly encouraged to attend the training provided for the READ 180 teachers.

### ***Principals***

Each year, principals of the treatment school are expected to periodically review SAM reports and analyze the strengths and needs of students. They are furthermore expected to observe READ 180 classrooms to help ensure fidelity. Administrators are also asked to communicate with the Office of Language Arts Literacy any concerns they have with READ 180 or classroom instruction.

Principals received 2 hours of training from Scholastic on the READ 180 model in Years 1 and 2. This training included the structure and management of a READ 180 classroom, use of curriculum materials, and how to differentiate instruction based on data from Scholastic Reading Inventory (SRI) reports. Principals did not receive this training in Year 3 or Year 4. However, principals are updated regularly by the RTCs on READ 180 implementation.

### ***Technology Coordinators***

Each year, technology coordinators actively monitor the READ 180 equipment and troubleshoot technical issues as needed. They also are responsible for creating student passwords, inputting student information at the beginning of the year, activating student site licenses, and creating class rosters on SAM. In Years 1 and 2, all nine treatment school technology coordinators received one-half day of training from Scholastic so that they could better support the installation and operation of the technology component of the curriculum. This training was not provided in Years 3 and 4. However, the district's systems analyst communicated regularly with the technology coordinators to provide ongoing technical support, as needed.

## ***RTCs***

Five RTC positions are supported by the Striving Readers grant. In Year 1 all five positions were filled, and the RTSs were tasked with providing support to teachers for both the whole-school intervention and the targeted intervention. The number of RTCs decreased to three active RTCs in Year 4 due to extended maternity leave and a medical leave of absence for two RTCs. RTCs have attended teacher READ 180 trainings and have visited all READ 180 classrooms to provide support to teachers via activities such as conducting needs assessments; providing demonstration lessons, in-class support, and coaching; assisting with instructional plans; conducting READ 180 articulation meetings; maintaining accurate records; interpreting student assessment data; and serving as liaisons with the district administration.

Table 3. Changes to READ 180 professional development model

	READ180 PD Model				Reason for change
	Year 1	Year 2	Year 3	Year 4	
<b>Teacher training</b>					
<b>Large-group</b>					
New teachers	3 days (16.5 hrs)	2 days (8 hrs)	1 day (5.5 hrs)	2 days (11 hrs)	To build internal capacity, district RTCs played a larger role in supporting READ 180 teachers from Years 1 to Year 3 with in classroom support and less large-group training. Training increased in Year 4 due to staffing changes.
Returning teachers	NA	2 days (8 hrs)	0 hrs	0 hrs	To build internal capacity, district RTCs played a larger role in supporting READ 180 teachers from Years 1 to Year 4 with in classroom support and less large-group training.
<b>Classroom support</b>					
All teachers	District RTCs: as needed basis Observations by principals	No change			
<b>Administrator support</b>					
Training for principals on READ180	2 hrs	2 hrs	0 hrs	0 hrs	Communication between RTCs and administrators became stronger; RTCs met with administrators periodically to analyze SAM reports and fidelity to the model.
<b>Technology support</b>					
Training for technology coordinators	½ day	½ day	0 hrs	0 hrs	NPS continued to build internal capacity by having the systems analyst provide support in Year 4.

## **1.B.2 Whole-School Intervention**

The whole-school intervention is designed to support the effective implementation of the existing district curriculum. Its goal is to improve students' ability to "read to learn" across multiple content areas. To this end, the intervention provides professional development to improve the literacy instruction of language arts and content area teachers. This professional development is provided through large-group training and is supported by in-school coaching visits. Language arts teachers and literacy coaches receive training from New Jersey City University (NJCU), and content area teachers receive instruction from the National Urban Alliance (NUA).

### ***Language Arts Teachers***

The professional development course for language arts teachers was designed by the literacy faculty from the NJCU School of Education. After receiving training, teachers are expected to implement the following strategies in their classrooms:

- Use graphic organizers, including flowcharts, webs, and tables (e.g., K-W-H-L-S) to build student reading comprehension skills
- Establish routines for effective oral and silent reading
- Use model text annotation, note taking, and post-reading reflection
- Use anticipation guides, the SQ3R (Survey, Question, Read, Recite, Review) method, and double-entry journals to build student writing, fluency, and reading comprehension skills
- Use small groups to target and differentiate instruction
- Use model context clues and personal dictionaries to enrich vocabulary and build linguistic competence
- Guide student discussion and use brainstorming techniques to facilitate students' exploration of the connections between reading and writing
- Review student work samples, including portfolios, journals, and notebooks to show the use of graphic organizers

NJCU provides in-school coaching visits during the school year. The visits are tailored to assist teachers through modeling and discussing classroom strategies learned at training. In alignment with the work of NJCU, the Striving Reader RTCs provided additional support through in-school visits, beginning in September and ending in June. During these visits, RTCs offer classroom support,

coaching, modeling; assistance with student work; and assistance using student data to inform instruction. In addition, the RTCs assist teachers in preparing for the NJASK, the GEPA initiative, and standards-based lesson planning.

### ***Content Area Teachers***

Content area teachers in Striving Readers schools receive training and in-school support from NUA, a nonprofit professional development group known for its work in content literacy. The instructional strategies undertaken by language arts literacy teachers are expected to improve students' vocabulary, fluency, and reading comprehension skills. To build on these improved skills, math, social studies, and science teachers are expected to incorporate NUA-developed graphic organizers ("Thinking Maps"), including the following:

- Circle Maps for context description
- Double Bubble Maps to compare and contrast information
- Tree Maps for inductive and deductive classification
- Brace Maps to identify part-whole relationships
- Flowcharts to review sequential order
- Multiflow Maps to explicate cause and effect relationships
- Bridge Maps to interpret analogies and metaphorical concepts

Based on NUA professional development, math, social studies, and science teachers also use anticipation guides to model brainstorming and prewriting strategies, as well as use taxonomies to promote word study and vocabulary development. Additionally, NUA mentors provide in-school coaching visits during the school year. These visits are tailored to demonstrate (and provide coaching in) the application of the strategies presented during the large-group workshops. As with language arts teachers, the RTCs provided additional support to content area teachers in the form of in-school visits.

## **1.B.2.1 Professional Development**

### ***Language Arts Teachers***

NJCU's professional development was designed to support the district's core literacy program, with a focus on strategies that enhance vocabulary development, fluency, and reading comprehension, such as graphic organizers and flowcharts. The amount of large-group training provided for Language Arts teachers decreased from previous years. In Years 1, 2, and 3 of the project NJCU provided a summer institute. This institute was cancelled in Year 4. In Years 2 and 3 NJCU also provided two large-group training days during the school year. In Year 4, only one large-group training was offered. The decrease in training was due to teaching days being added to the District calendar (taking away from the number of days available for professional development) and budget constraints.

In addition to the large-group training described above, NJCU teachers received ongoing classroom support in the form of in-school coaching visits. NJCU coaches were expected to visit all 19 Striving Readers schools, starting in September 2009 and ending in May 2010. Each school was to be visited by a NJCU coach 10 times<sup>6</sup> in Year 4. The number of coaching visits also decreased from previous years, where schools were to receive 12 total visits. Again, the reason given for the decrease was budget constraints. See Table 4 for a description of changes to the professional development trainings over the four years of the grant.

### ***Content Area Teachers***

The number of large-group training sessions for content area teachers also decreased in Year 4. In Years 1-3, math, science, and social studies teachers were offered a summer institute and two large-group workshops during the school year. In Year 4, one day of large-group training was provided. The reasons for the decrease are highlighted in Table 4. Overall, training decreased because teaching days were added to the District calendar (taking away from the number of days available for professional development) and budget constraints. Despite the decrease in training days, the intent of the training remained the same: to train teachers in cognitive strategies that focus on the teaching, learning, and assessment of advanced thinking; to break down school isolation; to build effective school teams; and to create a community of learners.

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<sup>6</sup> As contracted through the Striving Readers grant, NJCU was expected to make five visits to Striving Readers schools in Year 4; however, Title 1 funds were used to subsidize the number of visits for a total 10 visits per school.

In addition to the large-group training described, NUA teachers received ongoing classroom support through in-school coaching visits. The plan was for NUA to visit all 19 Striving Readers schools in the 4<sup>th</sup> year of the grant, starting in September 2009 and ending in June 2010. Each school was to be visited by a NUA mentor for 10 days. The number of in-school coaching visits decreased from previous years again due to budgetary reasons (See Table 4).

**Table 4. Changes to professional development models**

<b>NJCU</b>					
	<b>Year 1</b>	<b>Year 2</b>	<b>Year 3</b>	<b>Year 4</b>	<b>Reason for change</b>
<b>Large-group Teacher Training Summer Institute</b>	4 half days (16 hrs)	4 half days (16 hrs)	4 half days (16 hrs)	0 Days	Due to budget cuts, a summer institute could not be offered in Year 4.
School Year	0 days*	3 days (17.5 hrs)	2 days (12 hrs)	1 day (6 hours)	Days during the school year were added in year 2 to establish parity with NUA. Reduction from Year 2 to Year 3 and from Year 3 to Year 4 was because of reduction in district-allocated professional development days
<b>Classroom support</b>	NJCU coach: Each school to receive 5 visits.	NJCU coach: Each school to receive 10 visits.	NJCU coach: Each school to receive 12 visits.	NJCU coach: Each school to receive 12 visits.	In Years 2 and 3 more visits were added to establish parity with NUA.
<b>NUA</b>					
	<b>Year 1</b>	<b>Year 2</b>	<b>Year 3</b>	<b>Year 4</b>	<b>Reason for change</b>
<b>Large-group Teacher Training Summer Institute</b>	3 half days (12 hrs)	3 half days (12 hrs)	3 half days (12 hrs)	0 Days	Due to budget cuts, a summer institute could not be offered in Year 4
School Year	2 days (11 hrs)	2 days (12 hrs)	2 days (12 hrs)	1 day (6 hours)	Reduction in Year 4 was because of reduction in district-allocated professional development days
<b>Classroom support</b>	NUA Mentor: Each school to receive 15 visits.	NUA Mentor: Each school to receive 15 visits.	NUA Mentor: Each school to receive 15 visits.	NUA Mentor: Each school to receive 15 visits.	No Change

**Table 4. Changes to professional development models (continued)**

	RTCs				Reason for change
	Year 1	Year 2	Year 3	Year 4	
<b>Large-group Teacher Training School Year</b>	4 days (22 hrs)	0 days	0 days	0 days	RTCs provided professional development in Year 1 because NJCU did not provide large-group training during the school year. As NJCU's involvement intensified (large-group training and increased number of site visits), it was no longer necessary to have RTCs present.
<b>Classroom support</b>	District RTC: As needed basis	No Change			

\* Two make-up days were provided in September of Year 1 for teachers who missed the summer training.

### **1.B.2.2 Participating Schools, Teachers, and Students**

The 19 schools participating in the targeted intervention (see Section 1.C.1.1 for eligibility criteria) are also the schools participating in the whole-school intervention. However, the whole-school intervention is not being evaluated with a randomized design, so there are no treatment and control schools. For the whole-school intervention, all 6<sup>th</sup>, 7<sup>th</sup>, and 8<sup>th</sup> grade teachers and literacy coaches in all 19 schools receive the intervention.

In Year 4, 337 teachers were eligible to receive professional development as part of the whole-school intervention. Of these, 138 were eligible for professional development provided by the NUA (teachers who taught *only* math, science, or social studies). Fifty-nine<sup>7</sup> other teachers were eligible for training from NJCU (teachers who taught *only* language arts). In addition, 140 teachers were eligible for both NUA and NJCU training. These teachers either taught both language arts and a content area subject (usually social studies) or they taught all subjects (usually special education or bilingual teachers). Table 5 provides the number of teachers eligible for the professional development sessions for the two whole-school interventions, by subject areas taught.

<sup>7</sup> Includes 19 literacy coaches.

**Table 5. Distribution of teachers by subjects taught in Year 4**

Teacher subject	NUA		NJCU	
	No. of teachers	No. of schools	No. of teachers	No. of schools
Content area only (NUA)	138	19	N/A	N/A
Language arts only (NJCU)	N/A	N/A	59	19
Content area & language arts	140*	19	140*	19
<b>Total</b>	<b>278</b>	<b>19</b>	<b>199</b>	<b>19</b>

\* These teachers are counted in both categories.

Students in the whole-school intervention are from all 19 Striving Readers schools. All 6th, 7th, and 8th grade students from these participating Striving Readers schools are included.

## 1.C Logic Models

### 1.C.1 Targeted Intervention

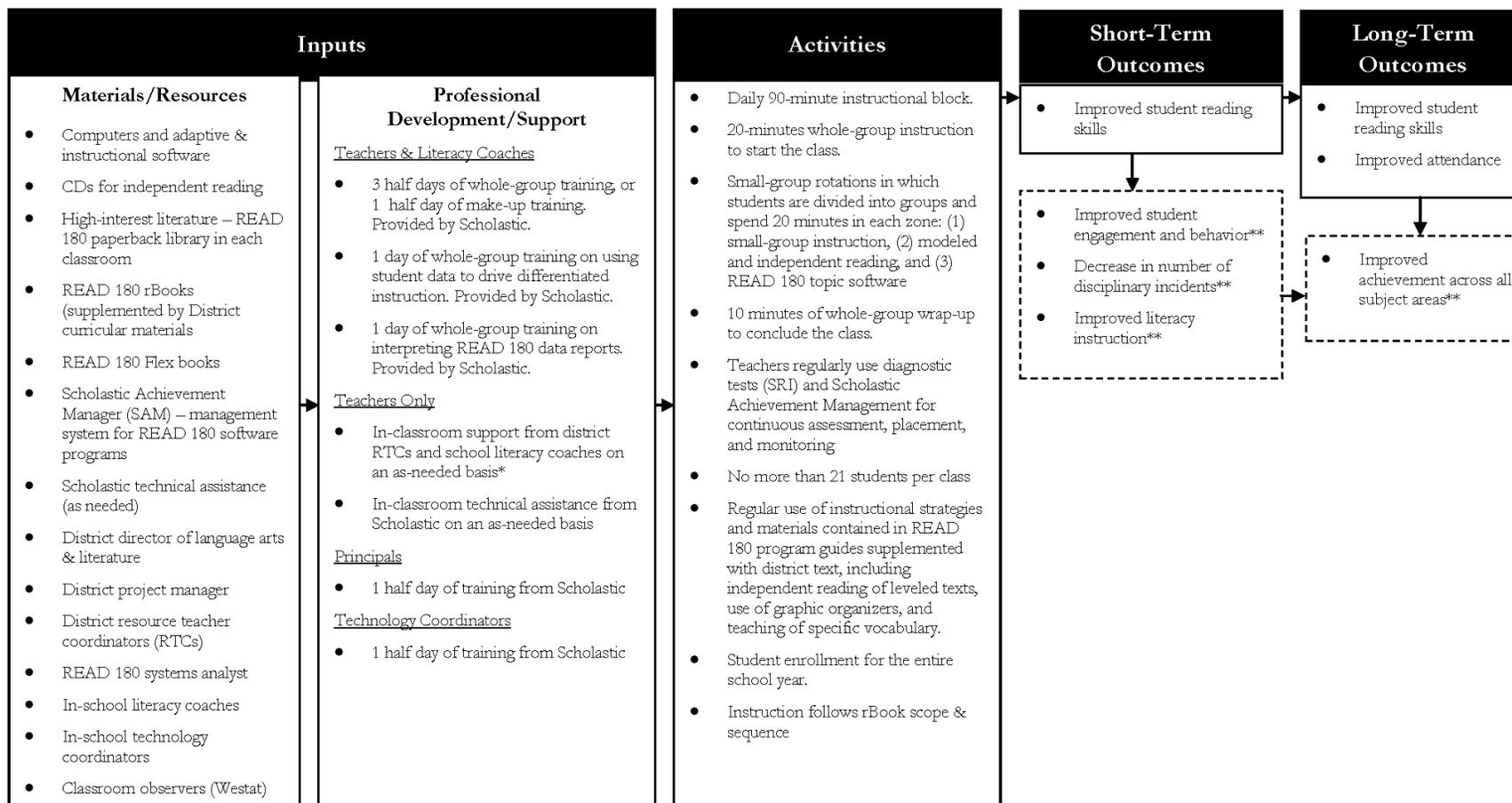
The targeted intervention provides language arts for middle school students through direct instruction, instructional software, and literature. It also replaces the regular language arts curriculum. The theory of change that underpins READ 180 is displayed in Figure 2. This theory of change provides the conceptual framework for the evaluation.

The first two columns in Figure 2 describe the resources necessary to implement the intervention. The first column lists the materials and resources that should be in place to support full implementation and use of READ 180. Materials include leveled library books, student eBooks, and Flex books, while the SAM database system allows teachers to periodically review and analyze the strengths and needs of students. The second column includes the professional development and support services<sup>8</sup> necessary for implementation. Scholastic staff, RTCs, literacy coaches, and technology coordinators all support the intervention.

The third column describes the activities of the intervention and includes instructional strategies that are necessary for full implementation of the targeted curriculum. All READ 180 teachers are intended to receive large-group training from Scholastic. Additionally, make-up training or in-school support is intended for those teachers who missed the summer session.

<sup>8</sup> Professional development activities varied in Years 2 and 3 of the grant.

Figure 2. Targeted intervention logic model<sup>9</sup>



Contextual effects such as the characteristics of the school district, other instructional programs in use, and external events may also influence outcomes.

\*The RTC school visits supported both the whole-school and targeted interventions of the Newark Striving Readers program.

\*\*These outcomes are not directly measured under the Newark Striving Readers grant.

<sup>9</sup> Logic model from year 1 of the study.

The last two columns of the logic model provide the short- and long-term outcomes that are anticipated. The theory of change posits that when all of the necessary resources are in place and the appropriate teaching and learning activities occur, students will first demonstrate improved reading skills and improved classroom behavior. The theory of change then suggests that these short-term outcomes will, in turn, result in longer term effects, reflected in improved achievement test results, increased school attendance, decreased discipline problems, and gains in student learning in all subject areas (White & Haslam, 2005).

The logic model reflects activities that occurred in Year 1 of the study. Specific changes made to the program model in Year 3 can be found in Table 3.

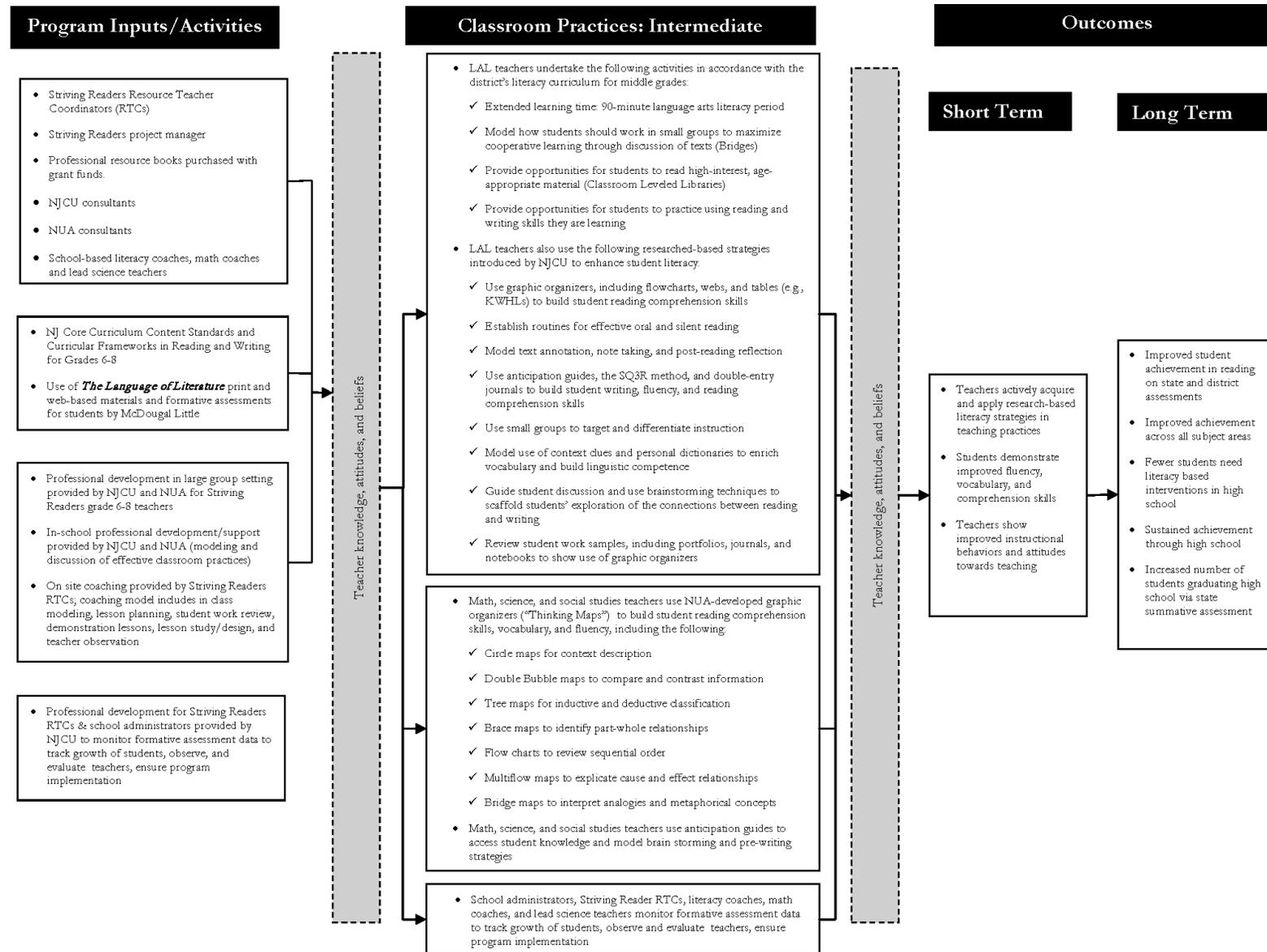
## **1.C.2 Whole-School Intervention**

The theory of action driving the district's whole-school intervention is illustrated in Figure 3. According to this logic model, language arts literacy teachers (including literacy coaches) receive professional development from NJCU. NUA provides the professional development for mathematics, science, and social studies content area teachers. Striving Reader RTCs support the implementation of both NJCU and NUA professional development approaches through site-based demonstration lessons and coaching.

The first column in Figure 3 documents the basic resources needed to fully implement the intervention, including professional resource books; *The Language of Literature* print and web-based materials; and in-school support from RTCs, NUA, and NJCU consultants. The second column documents NUA and NJCU instructional strategies. These classroom practices incorporate what literacy experts and practitioners recommend to help middle school students master basic reading skills: direct, explicit instruction in comprehension; modeling of reading and thinking strategies for comprehension; cooperative learning and discussion of texts among students; self-selected reading at students' ability levels to build motivation; ongoing progress monitoring; writing; age-appropriate and diverse reading materials; and interdisciplinary, classroom-based efforts to focus on literacy.

The last two columns of the logic model provide the anticipated short- and long-term outcomes. As with the targeted intervention, the theory of change posits that when all required resources are in place and the described activities and classroom practices occur, students will demonstrate improvements in literacy, including fluency, vocabulary, and comprehensions. In addition, teachers

Figure 3. Whole-school intervention logic model<sup>10</sup>



<sup>10</sup> Logic model from year 1 of the study.

are expected to demonstrate improvements in instructional behaviors and attitudes toward teaching. Furthermore, as a result of these short-term outcomes, the theory of change suggests that longer-term effects will occur. The expected longer-term outcomes include improvements in student achievement test results, a reduction in the number of students needing literacy-based interventions in high school, sustained student achievement through high school, and increases in the number of students who graduate from high school. In addition, teachers are expected to continue to implement research-based strategies as part of their instructional repertoire.

## **1.D Brief Overview of Key Evaluation Design Features**

### **1.D.1 Targeted Intervention**

#### **1.D.1.1 Key Research Questions**

The theoretical model for READ 180 presents a series of short- and long-term outcomes. Short-term outcomes include improved reading skills and student behavior, while longer term outcomes include continued improvement in reading skills, increased school attendance and grade promotion, and decreased disciplinary incidents. Some of these claims will be tested with the research questions presented in this section.

The three primary research questions that motivate the study design for the targeted intervention are the following:

1. Does READ 180 significantly improve the reading skills of targeted students?
2. Does READ 180 significantly improve school attendance of targeted students?
3. Do different types of students benefit from READ 180 in different ways?

The evaluation will determine whether READ 180 has a demonstrable impact<sup>11</sup> and if it works better for some students than for others. These questions will be addressed statistically by comparing students in treatment schools to students in control schools.

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<sup>11</sup> By impact the authors mean the difference between outcomes observed for students receiving the treatment and what *would have been observed for these same students had they not participated in READ 180*.

### **1.D.1.2 Unit of Random Assignment**

The schools eligible to participate in the Striving Readers program were randomly assigned to either the intervention or a control condition in May 2006 (see Section 1.C.1.2 for school eligibility requirements). The targeted evaluation is, therefore, a randomized cluster design; no classroom- or student-level random assignment was involved. Although randomly assigning students would be the most statistically efficient design, it was not feasible for this study. One of the main constraints was the cost of implementation, which is largely determined by the number of participating schools. Additionally, there are contamination and spillover effects associated with student-level randomization. For example, teachers are likely to be aware that a colleague is delivering a special intervention, and this awareness may influence their behavior. Additionally, intervention and nonintervention students would interact, possibly closing the gap between their differences. In either case, the impact estimates would be biased toward zero.

Fairness is another factor that argued for implementing the intervention at the school level. Principals may resist cooperating if only some of their teachers are provided with special training and materials. Even if principals allowed differential treatment within a school, there may be pressure to allow some practices to spill over into control classrooms, thus biasing impact estimates. There also would likely be pressure to allow students who “deserve” intervention to transfer (cross over) to treatment classrooms, again biasing the impact estimates.

Accordingly, the authors opted for a design that would randomly assign schools to the intervention group or to the control group. As stated previously, this design eliminates many of the threats to the study’s feasibility and validity. Moreover, to increase the precision of the estimates, the authors used a randomized block design. The school-level variables used for blocking<sup>12</sup> (in order of priority) were as follows:

1. Number of eligible students
2. Number of years school has been identified as “in need of improvement”
3. Number of eligible students whose home language is not English
4. Number of eligible students with an individual education plan (IEP).

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<sup>12</sup> Blocking variables will be included in the statistical model to estimate effects.

Using the number of eligible students as the primary blocking variable, schools were divided into three groups: large schools (more than 100 eligible students), medium schools (51–100 eligible students), and small schools (25–50 eligible students). Within these three strata, schools then were sorted by number of years in need of improvement under No Child Left Behind and then by home language and special education status. The baseline sample of schools was 20: 10 treatment and 10 control. The baseline sample became 19 when two of the control schools merged during the summer of 2006.

### 1.D.1.3 Key Measures for Student Outcomes

The key measures of student outcomes were the Reading and Language Arts subscales of the SAT 10<sup>15</sup> and school attendance (see Table 6). The Reading and Language Arts portion of the SAT 10 comprises three subtests: Vocabulary, Reading Comprehension, and Language Arts. The SAT 10 is administered by Westat staff and school attendance is compiled from district administrative data.

**Table 6. Key measures of student outcomes**

Measures	Student
<b>SAT 10</b>	
Vocabulary	✓
Reading Comprehension	✓
Language Arts	✓
<b>School Records (Attendance)</b>	✓

The Vocabulary subtest assesses concepts such as synonyms, multiple-meaning words, and use of context clues to decipher the meaning of unknown words. The Reading Comprehension subtest assesses students’ reading achievement using text read for enjoyment (e.g., fiction, poetry), text read for informational or expository purposes (e.g., science, textbook material), and everyday functional text (e.g., directions, labels, forms). The items in this section consist of increasingly complex reading passages, along with multiple-choice questions associated with each passage. There are six to nine passages, depending on grade level.

The Language Arts subtest is divided into three sections. The first focuses on language mechanics, including capitalization, punctuation, and usage. The second focuses on language expression, including writing strategies and sentence structure knowledge. The final section of the language arts

<sup>15</sup> Abbreviated battery.

subtest also focuses on language expression but on a higher level than the previous section. Students analyze written passages for the assessment of how well they recognize extraneous information and descriptive language and the combining of simple sentences.

Because READ 180 also claims to improve struggling readers attitudes toward school (Scholastic Research and Evaluation, 2008), the last student outcome is school attendance. Attendance was measured as the number of unexcused absences during the school year. This information is provided for each individual student from school administrative records.

## **1.D.2 Whole-School Implementation**

### **1.D.2.1 Key Research Questions**

There are two main goals for the whole-school evaluation. The primary goal is to determine the short-term effect of the professional development on teacher attitudes and instructional behavior. To collect these data, a series of teacher surveys was used. The secondary goal is to determine whether these potential changes in teacher attitude and behavior affect student achievement, using data from the New Jersey state reading assessment.

These two goals are reflected in the following three primary research questions for the whole-school evaluation:

1. Does participation in an ongoing literacy professional development program significantly improve the attitudes and instructional practices of middle school teachers?
2. Do different types of teachers benefit from on-going professional development in different ways?
3. Do changes in teacher instructional practices significantly improve the reading skills of middle school students?

### **1.D.2.2 Unit of Random Assignment**

There was no random assignment for the whole-school intervention. All 6th, 7th, and 8th grade teachers from all 19 Striving Readers schools were eligible to receive the whole-school professional development and in-school coaching visits.

### 1.D.2.3 Key Measures for Student and Teacher Outcomes

The key measures of teacher outcomes come from a survey of teachers. This survey measured basic demographic information and previous training experience of participating teachers. It also captured the degree to which the teacher felt supported by his or her institution as well as his or her job satisfaction. Teachers also had an opportunity to self-evaluate their effectiveness at delivering literacy concepts and to provide information on their instructional practices. This information also tapped into their attitudes about what is important and appropriate in the classroom. Finally, teachers provided information on how they used data on their students' assessments to tailor their classroom instruction. The pre-survey was administered before the teachers received any Striving Readers training. Multiple post-surveys then were administered during Year 1 and 2 to capture any change after receiving training.

The key measure for students' outcomes in the whole-school intervention is the state literacy assessment: the NJASK. Students in Grades 6 and 7 were assessed with the NJASK, while Grade 8 students were assessed with the NJASK8. More information on both of these assessments is provided in the following sections. Table 7 lists the key measures of student and teacher outcomes.

**Table 7. Key measures of teacher and student outcome variables**

Measures	Teacher	Student
<b>Teacher Survey</b>		
Perception of Institutional Support	✓	
Job Satisfaction	✓	
Self Evaluation of Effective Teaching	✓	
Classroom Instructional Practices	✓	
Student Assessment	✓	
Literacy Skills Assessment	✓	
<b>NJASK (6th &amp; 7th grade assessment)</b>		✓
<b>NJASK8 (8th grade assessment)</b>		✓

#### ***Grades 6 and 7: New Jersey Assessment of Skills and Knowledge***

The language arts literacy portion of the NJASK for Grades 6 and 7 provides a variety of texts, illustrations and activities integrated in such a way that encourages students to think, communicate and create original work. The variety and sequence of the assessment tasks aim to engage and sustain student interest and clearly measure what students know and can do. In each of the assessments, students write their own text and analyze text provided for them. Item types include performance-

based writing tasks and multiple-choice and open-ended reading tasks. The NJASK focuses on the following content clusters:

- *Work with or interpreting text (reading)*—These tasks involve identifying main ideas or themes, identifying supporting details, following directions, paraphrasing, organizing text, and understanding the purposes for reading.
- *Analyzing or critiquing text (reading)*—These tasks involve enhancing understanding through questioning, clarifying, and predicting; predicting meanings; drawing conclusions; and forming opinions about text and author techniques. Students are asked to explain or identify fundamentals and nuances of textual conventions and literary elements.
- *Generating text (writing)*—These tasks involve the use of pictures or text to make decisions, solve a problem, or write a story, thereby generating original student work

NJASK data are reported as scale scores ranging from 100 to 300 and are broken down into three proficiency levels:

Advanced Proficient	250–300
Proficient	200–249
Partially Proficient	100–199

The scores of students in the Partially Proficient category are considered to be below the state minimum for proficiency.

### **Grade 8: New Jersey Assessment of Skills and Knowledge Grade 8**

The NJASK8 measures student ability in the areas of language arts literacy and is used to indicate progress students are making toward mastering skills they will need to pass the High School Proficiency Assessment. These skills are outlined in the state Language Arts Literacy Core Curriculum Content Standards and cover the content clusters in the NJASK. The assessment is designed to help students ask questions, speculate, explore new ideas, and form tentative opinions.

The language arts literacy portion of the assessment focuses on students' ability to construct meaning through text. It is an integrated, project-oriented unit through which students draw on their speaking, listening, writing, reading, and viewing experiences to think, learn, communicate, and create original work. The language arts assessment provides a variety of texts, illustrations, and activities intended to engage and sustain student interest in the content and sequence of assessment

topics and tasks. In the assessment, students alternate between generating their own text and analyzing text provided for them. This permits students to use and enrich their literacy experiences as they demonstrate their knowledge of and skills in language use in varied contexts of language arts literacy.

The NJASK8 uses various tasks to assess student performance, including performance-based tasks (speaking and writing) and multiple-choice and open-ended (reading, listening, and viewing). The assessment also includes audio and visual materials and formats to help students construct meaning as they speak, listen, write, read and view. Finally, students use information from a reading selection or selections to complete a writing project. Students are provided time to prepare notes and materials for their speaking presentations.

NJASK8 data are reported as scale scores ranging from 100 to 300 and are broken down into the same three proficiency levels as the NJASK for 6th and 7th graders:

Advanced Proficient	250–300
Proficient	200–249
Partially Proficient	100–199

The scores of students in the Partially Proficient category are considered to be below the state minimum for proficiency.

# Implementation of the Targeted Intervention: Years 1, 2, 3, and 4

## 2

### 2.A Implementation Study Design

The extent to which treatment schools fully implemented the READ 180 curriculum was measured and summarized in Years 1, 2, 3 and 4 of the targeted evaluation. In Year 1, fidelity was measured via classroom observations and administrative data from NPS. In Years 2, 3, and 4 only administrative data from NPS were used to measure fidelity. The next few sections will detail fidelity scores for Year 4. In an effort to examine differences in fidelity from year to year, only fidelity subscores comparable for all four years will be discussed in the later sections of this report.<sup>14</sup>

### 2.B Implementation Results

To determine the degree of fidelity to READ 180, the following components were evaluated for each READ 180 teacher:

- Training
- Class size
- Ongoing student assessments
- Use of instructional software

Fidelity to the training component was measured by attendance at READ 180 trainings by teachers. Fidelity to the remaining three components was based on guidelines in Scholastic's READ 180 materials and was measured using data provided from the Scholastic Achievement Manager (SAM). Each of these fidelity components is discussed in more detail in the following sections.

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<sup>14</sup>Classroom observation findings can be found in the Year 1 report.

## 2.B.1 Training

### 2.B.1.1 Teachers

In Year 4, new teachers were invited to attend two training days (5.5 hours each) during the school year--December 15, 2009 and March 8, 2010. Returning teachers did not attend the training days because they received the training in previous years. Make-up training was not offered for new teachers who may have missed either training day. NPS felt that the RTCs had become well versed with the READ 180 implementation and could offer the in-class support needed to offset the lack of additional training days. Levels of participation are outlined in Table 8. Table 9 provides the number and percentage of teachers at each of the levels of participation.

**Table 8. Participation categories for READ 180 training, Year 4**

Component	Full participation	Moderate participation	No participation
December and March trainings	2 days	1 day	0 day

**Table 9. Number and percentage of new READ 180 teachers by level of participation, Year 4**

	Number	%
Full participation	2	40
Moderate participation	3	60
No participation	0	0
<b>Total</b>	<b>5</b>	<b>100</b>

### 2.B.1.2 Literacy Coaches

In Year 4, READ 180 training was not offered to literacy coaches. Instead, READ 180 classrooms were heavily supported by RTCs who have had a larger role in scaffolding the implementation of the curriculum.

### 2.B.1.3 Other Staff

Trainings for principals and technology coordinators were not offered in Year 4. Instead, RTCs continued to work closely with principals in Year 4 to ensure fidelity to the instructional model,

analysis of reports, and using data to inform instruction. The NPS systems analyst communicated regularly with the technology coordinators at each treatment school to provide ongoing technical training and support.

### **2.B.1.4 RTC In-School Coaching**

RTCs continued to support READ 180 teachers in year 4. Treatment schools received coaching visits from RTCs specifically about READ 180 between September 2009 and June 2010 on an as-needed basis. On average, treatment schools received 19.7 visits, ranging from 14 to 28 (see Table 10). As in Year 3, RTCs met primarily with teachers. They also met with literacy coaches, vice principals, and principals. Visits consisted of identifying READ 180 students, reviewing READ 180 lesson plans, using Scholastic Reading Inventory (SRI) data and the SAM, monitoring, coaching, and modeling lessons.

**Table 10. Number of READ 180 RTC visits received by schools in Years 4**

<b>Treatment School</b>	<b>Number of Visits</b>
School 4	21
School 5	16
School 6	16
School 8	17
School 10	27
School 13	20
School 14	20
School 15	14
School 16	18
School 17	28
<b>Average</b>	<b>19.7</b>

### **2.B.2 Class Size**

Scholastic’s READ 180 materials indicate that no more than 21 students should be enrolled in a READ 180 classroom.<sup>15</sup> The data used to measure fidelity to this component were provided by NPS from the SAM database.

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<sup>15</sup> Scholastic states that “enrollment should not exceed 21 students, with 15-18 students representing an ideal class size” *READ 180 Enterprise Edition Research Protocol and Tools – Implementation Checklist* (Scholastic Research and Evaluation, 2007, p. 11).

Sixty-six percent of READ 180 teachers teach more than one section of READ 180. Therefore, to determine fidelity to this component, the percentage of sections taught by the same teacher with fewer than 21 students is used (see Table 11). For example, if a teacher has three READ 180 sections, and all of them are of the correct size (fewer than 21 students), then 100 percent of the sections meet the criteria for this component and they would be classified as fully implemented. As Table 12 shows, all teachers had class sizes that met READ 180 guidelines of 21 students or less.

**Table 11. Criteria for measurement of fidelity to the class size requirements of the READ 180 curriculum**

<b>% of sections taught with &lt; 21 students</b>	<b>Scale</b>	<b>Level</b>
75-100%	4	High
50-74%	3	Moderate-to-High
25-49%	2	Low-to-Moderate
0-24%	1	Low

**Table 12. Teacher-level summary scores for class size component by criteria**

<b>Treatment school</b>	<b>Classroom teacher</b>	<b>Fidelity component score</b>	<b>Fidelity level</b>
School 4	A	4	High
School 4	B	4	High
School 5	A	4	High
School 5	B	4	High
School 6	A	4	High
School 6	B	4	High
School 6	C	4	High
School 8	A	4	High
School 8	B	4	High
School 10	A	4	High
School 13	A	4	High
School 13	B	4	High
School 13	C1/C2*	4	High
School 13	D	4	High
School 14	A	4	High
School 15	A	4	High
School 16	A	4	High
School 17	A1/A2*	4	High
School 17	B1/B2*	4	High
School 17	C	4	High
School 17	D	4	High

\* Teachers co-taught in these classrooms.

### 2.B.3 Ongoing Student Assessment

Scholastic’s SRI Assessment allows teachers to monitor student progress by assessing comprehension reading growth. This assessment tool compares both individual and group scores, which allows administrators to make recommendations for regrouping students based on those scores. Scholastic stresses the importance of ongoing monitoring so that teachers can use the information to most effectively differentiate instruction and check progress. Scholastic recommends that teachers administer a minimum of three SRI assessments per year.<sup>16</sup>

The number of SRI assessments for all students were analyzed to determine fidelity. Criteria for fidelity scores are presented in Table 13 and SRI fidelity scores for each school are presented in Table 14. These data were provided by NPS from the SAM database.

**Table 13. Criteria for measurement of fidelity to the READ 180 requirements for monitoring student progress**

<b>% of students with 3 or more SRIs</b>	<b>Scale</b>	<b>Level</b>
75 – 100%	4	High
50 – 74%	3	Moderate-to-High
25 – 49%	2	Low-to-Moderate
0 – 24%	1	Low

It should be noted that the attendance of a student could affect the number of SRIs that student takes, with chronically absent students or mid-year transfer students being less likely to take the full complement of assessments. Despite this, all teachers assessed more than 75 percent of their students at least three times during the school year (see Table 14). On average, teachers administered 4.7 SRIs per student in Year 4.

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<sup>16</sup>Scholastic states that regular assessment of student reading and writing proficiency is necessary through the “administration of the SRI (3-5 times per year)” *READ 180 Enterprise Edition Research Protocol and Tools – Implementation Checklist* (Scholastic Research and Evaluation, 2007, p. 11)

**Table 14. Teacher-level summary score for assessment component by criteria**

School	Classroom teacher	Fidelity component score	Fidelity level
School 4	A	4	High
School 4	B	4	High
School 5	A	4	High
School 5	B	4	High
School 6	A	4	High
School 6	B	4	High
School 6	C	4	High
School 8	A	4	High
School 8	B	4	High
School 10	A	4	High
School 13	A	4	High
School 13	B	4	High
School 13	C1/C2*	4	High
School 13	D	4	High
School 14	A	4	High
School 15	A	4	High
School 16	A	4	High
School 17	A1/A2*	4	High
School 17	B1/B2*	4	High
School 17	C	4	High
School 17	D	4	High

\* Teachers co-taught in these classrooms.

## 2.B.4 Instructional Software

Part of the READ instructional model consists of a 60-minute segment in which students break into three small groups that rotate among three stations: small group instruction, independent reading, and READ 180 software.

Scholastic recommends that students use the READ 180 software a minimum of three times a week and 15 minutes per session.<sup>17</sup> The numbers of student sessions as well as the length of these sessions were provided by NPS from the SAM database. The percentage of students who received both a minimum of three sessions per week and a minimum of 15 minutes per session was used to determine fidelity to this component (see Table 15).

<sup>17</sup>Scholastic states that “to receive the full benefits of READ 180, your students should use the topic software at least 15 minutes a day” *READ 180 Enterprise Edition Placement, Assessment, and Reporting Guide* (Scholastic Research and Validation, 2005, p. 81).

**Table 15. Criteria for measurement of fidelity to the READ 180 requirements for student software use**

<b>% of students with adequate exposure to software</b>	<b>Scale</b>	<b>Level</b>
75 - 100%	4	High
50 - 74%	3	Moderate-to-High
25 - 49%	2	Low-to-Moderate
0 - 24%	1	Low

To explore the possible reasons for the low percentage of teachers who ensured that their students had adequate levels of exposure, the two parts of this subscale (number of sessions and time per session) are examined separately in Table 16.

As can be seen from Table 16, all teachers adhered to the recommended 15 minute length of session. However, fidelity to a minimum of three sessions per week appeared to be more of a challenge. RTCs have noted instances in which students did not log off of the computer properly, which may have led to an underestimate in software usage.

**Table 16. Teacher-level summary score for time on instructional software by criteria**

<b>Treatment school</b>	<b>Classroom teacher</b>	<b>Instructional minutes score</b>	<b>Number of sessions score</b>	<b>Fidelity component score</b>	<b>Fidelity level</b>
School 5	A	4	4	3	Moderate-to-High
School 10	A	4	4	3	Moderate-to-High
School 4	B	4	2	2	Low-to-Moderate
School 5	B	4	3	2	Low-to-Moderate
School 17	A1/A2*	4	3	2	Low-to-Moderate
School 17	D	4	3	2	Low-to-Moderate
School 4	A	4	1	1	Low
School 6	A	4	1	1	Low
School 6	B	4	2	1	Low
School 6	C	4	2	1	Low
School 8	A	4	2	1	Low
School 8	B	4	3	1	Low
School 13	A	4	3	1	Low
School 13	B	4	1	1	Low
School 13	C1/C2*	4	1	1	Low
School 13	D	4	1	1	Low
School 14	A	4	2	1	Low
School 15	A	4	1	1	Low
School 16	A	4	3	1	Low
School 17	B1/B2*	4	3	1	Low
School 17	C	4	3	1	Low
<b>Average</b>		<b>4.0</b>	<b>2.3</b>	<b>1.4</b>	

\* Teachers co-taught in these classrooms.

## 2.B.5 Participation Summary, Year 4

In Year 4, an overall school-level summary scale was developed to see how the different facets of fidelity have come together. Table 17 lists the definitions for the school-level implementation. Each school was assigned a level rating: Low, Low-to-Moderate, Moderate-to-High, or High (see Table 18). Forty percent of schools achieved high implementation in all three components. The remaining 60 percent schools had moderate-to-high implementation.

**Table 17. Criteria for fidelity to READ 180 implementation**

Average score	Level
3.1-4	High
2.1-3	Moderate-to-High
1.1-2	Low-to-Moderate
0-1	Low

**Table 18. Average school-level summary scores for implementation in READ 180 intervention in Year 4**

Treatment School	Professional Development*	Class size	Ongoing Student Assessment	Instructional Software Use	Average score	Summary Implementation scores
School 10	–	4	4	3	3.7	High
School 5	–	4	4	2.5	3.5	High
School 4	–	4	4	1.5	3.2	High
School 17	–	4	4	1.5	3.2	High
School 6	–	4	4	1	3.0	Moderate-to-High
School 8	–	4	4	1	3.0	Moderate-to-High
School 13	–	4	4	1	3.0	Moderate-to-High
School 14	–	4	4	1	3.0	Moderate-to-High
School 15	–	4	4	1	3.0	Moderate-to-High
School 16	–	4	4	1	3.0	Moderate-to-High

\*A summary score was not calculated for professional development due to a change in the professional development model.

## 2.C Barriers to Targeted Implementation, Year 4

A serious challenge in implementation of the targeted intervention in Year 4 has been students being “pulled” from READ 180 for a number of reasons. Students have been pulled from their READ 180 classrooms to attend other events in the schools (e.g., field trips, additional testing).

Coordination and communication issues remain between the Office of Language Arts Literacy and the Office of Special Education. The Child Study Team continues to pose that READ 180 violates the individualized education programs (IEPs) of some students. The district continues to ensure buy-in from the inclusion teachers as much as possible, but this has been difficult.

Another implementation challenge has been that the amount of support provided by the RTCs has decreased from previous years. The number of RTCs has dropped from 5 to 3 for various medical reasons. As a result, the number of visits varied ranging from 14 to 28.

Teacher and principal turnover through the four years of the grant has been a small challenge, although yearly training and RTC visits keeps new and old teachers up to date on READ 180 techniques. However it should be noted that there were changes and principals across all four years of the grant. Over half of the teachers in Year 4 remained in Year 3 (see Table 19). During the course of 4 years, new teachers have been hired, transferred, or have changed positions. Table 20 describes how many teachers have taught for 1 or more years of the grant. While 16 percent of teachers have remained in the project over the first four years, 46 percent of teachers have only taught for one out of the four years.

**Table 19. Teacher turnover from Year 3 to Year 4**

Year 3 teacher	Year 4 teacher	Number of teachers	%
Yes	Yes	15	56%
Yes	No	12	44%
No	Yes	6	–

**Table 20. Number of teachers by years of participation in READ 180**

Number of years	Number of teachers	%
All 4 Years	8	16
3 Years	8	16
2 Years	11	22
1 Year	23	46
<b>Total</b>	<b>50</b>	<b>100</b>

The 10 treatment schools have had 19 principals during the 4 years of the project. Although there was little turnover between Years 3 and 4 (see Table 21), very few principals (15.8 percent) have remained for all 4 years of Striving Readers see Table 22.

**Table 21. Principal turnover from Year 3 to Year 4**

Year 3 principal	Year 4 principal	Number of principals	%
Yes	Yes	9	90%
Yes	No	1	10%
No	Yes	1	-

**Table 22. Number of principals by years in READ 180**

Number of years	Number of principal	%
All 4 Years	3	15.8
3 Years	4	21.1
2 Years	4	21.1
1 Year	8	42.1
<b>Total</b>	<b>19</b>	<b>100</b>

## **2.D Years 1-4 Implementation Summary**

### **2.D.1 Training , Years 1-4 Summary**

At the beginning of the grant (Year 1), READ 180 training was held during the summer for all teachers. Make-up training was made available during the school year for those who missed the initial training. In Year 2, all teachers were asked to attend training as a refresher to the previous year’s READ 180 training. In Year 3, however, the format of training changed—only new teachers were invited to attend. Only one teacher, who was a new hire, attended the training. The other teachers new to READ 180 were unable to attend because they were brought on as staff after the training occurred. In Year 4, training was offered to five teachers new to READ 180. As with Year 3, returning teachers did not attending the trainings.

In Year 1, all of the school principals attended the implementation meeting, which outlined the logistics and requirements for executing READ 180 and the READ 180 training session. In Year 2, 5 of the 10 treatment school principals attended the READ 180 training. In Years 3 and 4, principals did not receive training, but were updated regularly by the RTCs on READ 180 implementation.

Few literacy coaches attended READ 180 training in Years 1 and 2. In Year 1, 20 percent of the coaches received training in the READ 180 curriculum. In Year 2, none of the coaches attended the summer training because of a scheduling conflict. In Years 3 and 4, training was not offered.

In Years 1 and 2, all technology coordinators received training from Scholastic so that they could better support the installation and operation of the technology component of the curriculum. In Years 3 and 4, training was not offered. However, the district’s systems analyst communicated regularly with the technology coordinators to provide ongoing technical training and support.

In Year 1, data on RTC visits specific to READ 180 classrooms were not available. In Year 2, treatment schools received READ 180 coaching visits from RTCs between September 11, 2007, and June 24, 2008.<sup>18</sup> On average, treatment schools received 19.4 visits, ranging from 7 to 38. In Year 3, the average visits rose to 21.1, but declined slightly to 19.7 in Year 4 (see Table 23). During these visits RTCs met primarily with teachers, but there were also instances in which they met with literacy coaches, vice principals, and principals.

**Table 23. Number of READ 180 RTC visits received by schools in Years 2, 3, and 4\***

<b>Treatment School</b>	<b>Year 2</b>	<b>Year 3</b>	<b>Year 4</b>
School 4	20	41	21
School 5	19	22	16
School 6	22	19	16
School 8	38	25	17
School 10	7	20	27
School 13	15	30	20
School 14	23	5	20
School 15	18	12	14
School 16	13	10	18
School 17	19	27	28
<b>Average</b>	<b>19.4</b>	<b>21.1</b>	<b>19.7</b>

\* In Year 1, visitation logs did not differentiate between visits made for the whole-school intervention and the targeted intervention; therefore, it was not possible to determine how many READ 180 coaching visits schools received from RTCs.

## **2.D.2 Class Size, Years 1-4 Summary**

In Year 1, 74 percent of teachers had class sizes within Scholastic guidelines. In year 2, this increased to 100 percent. In Year 3, 95.5 percent of teachers had class sizes that met READ 180 guidelines of

<sup>18</sup> Visits supported the whole-school intervention and the targeted intervention.

21 students or less. In Year 4, this increased to 100 percent. Table 24 provides the number and percentage of teachers for Years 1, 2, 3, and 4 that were at each of the levels of fidelity to class size.

**Table 24. Number\* and percentages of teachers by level fidelity to class size requirements, Years 1, 2, 3, and 4**

	Year 1		Year 2		Year 3		Year 4	
	Number	%	Number	%	Number	%	Number	%
High	17	73.9%	22**	100.0%	21	95.5%	21	100.0%
Moderate-to-High	3	13.0%	0	0.0%	0	0.0%	0	0.0%
Low-to-Moderate	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Low	3	13.0%	0	0.0%	1	4.5%	0	0.0%
<b>TOTAL</b>	<b>23</b>	<b>100%</b>	<b>22**</b>	<b>100%</b>	<b>22</b>	<b>100%</b>	<b>21</b>	<b>100.0%</b>

\* The number of teachers is characterized by the lead classroom teacher. In instances in which a classroom was co-taught, only the lead teacher was included in the teacher count.

\*\* Two classrooms had teachers leave their respective school mid-year. In each case, only one teacher is included in the teacher count.

At the school-level, 6 schools (60 percent) received an average score in the High category for all four years of the study. The most variation in scores occurred in Year 1, while in Year 2, all of the schools received an average rating in the High category.

### 2.D.2.1 Changes in Class Size Fidelity Among Years 1, 2, 3, and 4

Four schools showed an increase in their average fidelity score from Year 1 to Year 2. The majority of schools exhibited no change from Year 2 to Year 3. In Year 4, all schools obtained an average score in the High category. Interestingly, the 3 of the 4 schools that showed an increase from Year 1 to Year 2, maintained an average score in the High category in Year 4. Table 25 shows the criteria for fidelity to class size requirements, and Table 26 shows changes in class size fidelity from the first three years of the grant.

**Table 25. Criteria for fidelity to class size requirements**

Average school score	Level
3.1-4	High
2.1-3	Moderate-to-High
1.1-2	Low-to-Moderate
0-1	Low

**Table 26. Year 1, 2, 3, and 4 average scores by school by level of fidelity to class size requirements**

Treatment School	Year 1 (1-4)	Year 2 (1-4)	Year 3 (1-4)	Year 4 (1-4)	Change from Year 3 to Year 4	Change from Year 1 to Year 4
School 4	2	4	4	4	0	2
School 5	4	4	4	4	0	0
School 6	4	4	4	4	0	0
School 8	2.5	4	2.5	4	1.5	1.5
School 10	4	4	4	4	0	0
School 13	3.7	4	4	4	0	.3
School 14	4	4	4	4	0	0
School 15	4	4	4	4	0	0
School 16	4	4	4	4	0	0
School 17	3.2	4	4	4	0	.8

### 2.D.3 Ongoing Assessment, Years 1-4 Summary

The number of SRI assessments for all 4 years were analyzed to determine fidelity (see Table 27). The vast majority of teachers assessed more than 75 percent of their students at least three times during Year 1. In Years 2, 3, and 4, all teachers assessed more than 75 percent of their students at least three times during the schools year.

**Table 27. Number\* and percentages of teachers by level fidelity to assessment requirements, Years 1, 2, 3, and 4**

	Year 1		Year 2		Year 3		Year 4	
	Number of teachers	%						
High	20	90.9%	22	100.0%	22	100.0%	21	100.0%
Moderate-to-High	1	4.5%	0	0.0%	0	0.0%	0	0.0%
Low-to-Moderate	1	4.5%	0	0.0%	0	0.0%	0	0.0%
Low	0	0.0%	0	0.0%	0	0.0%	0	0.0%
<b>TOTAL</b>	<b>22**</b>	<b>100%</b>	<b>22***</b>	<b>100%</b>	<b>22</b>	<b>100%</b>	<b>21</b>	<b>100%</b>

\* The number of teachers is characterized by the lead classroom teacher. In instances in which a classroom was co-taught, only the lead teacher was included in the teacher count.

\*\* Data for one teacher was unavailable.

\*\*\* Two classrooms had teachers leave their respective school mid-year. In each case, only one teacher is included in the teacher count.

In terms of school-level, the average rating for all four years was in the High category. Table 28 defines each school score and Table 29 shows overall ratings of fidelity to assessment requirements across the four years of the grant.

**Table 28. Criteria for fidelity to assessment requirements**

Average school score	Level
3.1-4	High
2.1-3	Moderate-to-High
1.1-2	Low-to-Moderate
0-1	Low

**Table 29. Year 1, 2, 3, and 4 average ratings by school by level of fidelity to assessment requirements**

Treatment School	Year 1 (1-4)	Year 2 (1-4)	Year 3 (1-4)	Year 4 (1-4)	Change from Year 3 to Year 4	Change from Year 1 to Year 4
School 4	4	4	4	4	0	0
School 5	4	4	4	4	0	0
School 6	4	4	4	4	0	0
School 8	4	4	4	4	0	0
School 10	4	4	4	4	0	0
School 13	4	4	4	4	0	0
School 14	4	4	4	4	0	0
School 15	4	4	4	4	0	0
School 16	4	4	4	4	0	0
School 17	4	4	4	4	0	0

### **2.D.3.1 Changes in Ongoing Assessment Among Years 1, 2, 3, and 4**

There were no changes in ongoing assessment at the school level from years 1 to 4 or between years. The same holds true for teachers. All teachers assessed more than 75 percent of their students at least three times during the school year for all four years of the grant.

### **2.D.4 Instructional Software, Years 1-4 Summary**

In Year 1, 65 percent of teachers ensured that more than half of their students had moderate levels of exposure to the instructional software. In Year 2, the percentage fell to 9 percent. In Year 3, it

rose to 18 percent. In Year 4, only 9 percent of teachers ensured that more than half of their students had moderate levels of exposure to the instructional software none of the (see Table 30).

**Table 30. Number\* and percentages of teachers by level fidelity to instructional software guidelines, Years 1, 2, 3, and 4**

	Year 1		Year 2		Year 3		Year 4	
	Number of teachers	%						
High	15	65.2%	2	9.1%	4	18.2%	0	0.0%
Moderate-to-High	6	26.1%	0	0.0%	7	31.8%	2	9.5%
Low-to-Moderate	2	8.7%	2	9.1%	5	22.7%	4	19.1%
Low	0	0.0%	18	81.8%	6	27.3%	15	71.4%
<b>TOTAL</b>	<b>23</b>	<b>100%</b>	<b>22**</b>	<b>100%</b>	<b>22</b>	<b>100%</b>	<b>21</b>	<b>100%</b>

\*The number of teachers is characterized by the lead classroom teacher. In instances in which a classroom was co-taught, only the lead teacher was included in the teacher count.

\*\*Two classrooms had teachers leave their respective school mid-year. In each case, only one teacher is included in the teacher count.

Table 31 defines each school score and Table 32 shows overall ratings of fidelity to instructional software requirements across the first three years of the grant.

**Table 31. Criteria for fidelity to instructional software guidelines**

Average school score	Level
3.1-4	High
2.1-3	Moderate-to-High
1.1-2	Low-to-Moderate
0-1	Low

**Table 32. Year 1, 2, 3, and 4 average ratings by school by level fidelity to instructional software guidelines**

<b>Treatment School</b>	<b>Year 1 (1-4)</b>	<b>Year 2 (1-4)</b>	<b>Year 3 (1-4)</b>	<b>Year 4 (1-4)</b>	<b>Change from Year 3 to Year 4</b>	<b>Change from Year 1 to Year 4</b>
School 4	3	1	4	3	-1	0
School 5	3.5	2	4	2.5	-1.5	-1
School 6	3.5	1.8	4	1.5	-2.5	-2
School 8	3.5	1	2.5	1.5	-1	-2
School 10	4	4	4	1	-3	-3
School 13	3.7	1	4	1	-3	-2.7
School 14	3	1	4	1	-3	-2
School 15	3.5	1	4	1	-3	-2.5
School 16	3.5	1	4	1	-3	-2.5
School 17	3.6	1.3	4	1	-3	-2.6

In Year 1, the school level average for the majority of schools was in the High category. In Year 2, however, 90 percent of schools dropped to the Low-to-Moderate category. When asked about this substantial drop in fidelity, NPS hypothesized that some of it maybe due to instances in which students did not log off of the computer properly, which may have led to an underestimate in software usage. Fidelity to this component rebounded in Year 3 with all schools improving, especially 90 percent of schools in the High category. In Year 4, the majority of schools dropped again to the Low category. As in Year 2, instances of students improperly logging off of the computer may have led to an underestimate in software usage.

#### **2.D.4.1 Changes in Instructional Software Among Years 1, 2, 3, and 4**

Only one school remained unchanged in the High category for the first three years of the study and fell to the Moderate-to-High category in Year 4. There was a large decrease in fidelity for nine schools from Year 1 to Year 2. All of those schools increased in Year 2 and continued to increase in fidelity in Year 3, but decreased again in Year 4. Changes from Year 1 to Year 4 show a large decrease in fidelity to the component in all but one school.

# Impacts of the Targeted Intervention: Years 1, 2, 3 and 4

## 3

### 3.A Study Design and Analytic Approach

#### 3.A.1 Sampling Plan

##### 3.A.1.1 Power

Power estimates describe how likely differences between treatment and control groups can be detected. Power calculations were conducted in the fall of 2006 using the following set of assumptions:

1. A total of 19 schools randomly assigned to treatment and control groups
2. About 90 students at each school participating at each time point
3. An intraclass correlation (ICC) of .02 (2 percent of the total variation in the outcome is between schools)
4. An alpha level for the statistical test set at .05 (two-tailed test)

The power calculations assume that level 2 covariates do not explain variation in student outcomes. In fact, with a baseline ICC of 0.02, there is not much between-school variation to explain. Based on these power calculations, an effect size of .24 (just under a quarter of a standard deviation) can be detected with the number of students participating in the study.

Using the standard deviations from the 8th grade Language Arts assessments in the SAT9 (Pearson Assessment, 1996), Table 33 illustrates the boost in scores because of intervention, assuming an effect size of .24.

**Table 33. Illustrative example of the practical significance of a .24 effect**

SAT9 subtest	Standard deviation	Effect size of intervention	Yearly score increase	Total increase over 4 years
Reading Vocabulary	46	.24	11 points	33 points
Reading Comprehension	41	.24	10 points	30 points
Language Arts	38	.24	9 points	27 points

This example shows that, with an effect size of .24, the power calculation should allow a difference of 9 points (and higher) between treatment and control students each year on the Language Arts subtest to be detected.

### **3.A.1.2 School Eligibility, Randomization, and Sample Size**

To participate in the Striving Readers grant, schools had to meet the following eligibility criteria:

1. Be Title I eligible
2. Serve a minimum of two grades (from 6,7,8)
3. Not using READ 180
4. Be categorized as “in need of improvement” under the No Child Left Behind Act (NCLB)
5. Serve a minimum of 25 eligible students

Based on these criteria, 20 schools were initially eligible. After randomization, two control schools later merged, leaving 19 participating schools. For the targeted portion of the grant, these schools were randomly assigned to either the intervention or the control condition.

The randomization process used blocking variables. Using the number of eligible students as the primary blocking variable, schools were divided into three groups: large schools (more than 100 eligible students), medium schools (51–100 eligible students), and small schools (25–50 eligible students). Within these three groups, schools then were sorted by number of years in need of improvement (INOI) under NCLB and then by home language and special education status. Table 34 provides details of this blocking information.

**Table 34. Blocking data used for random assignment**

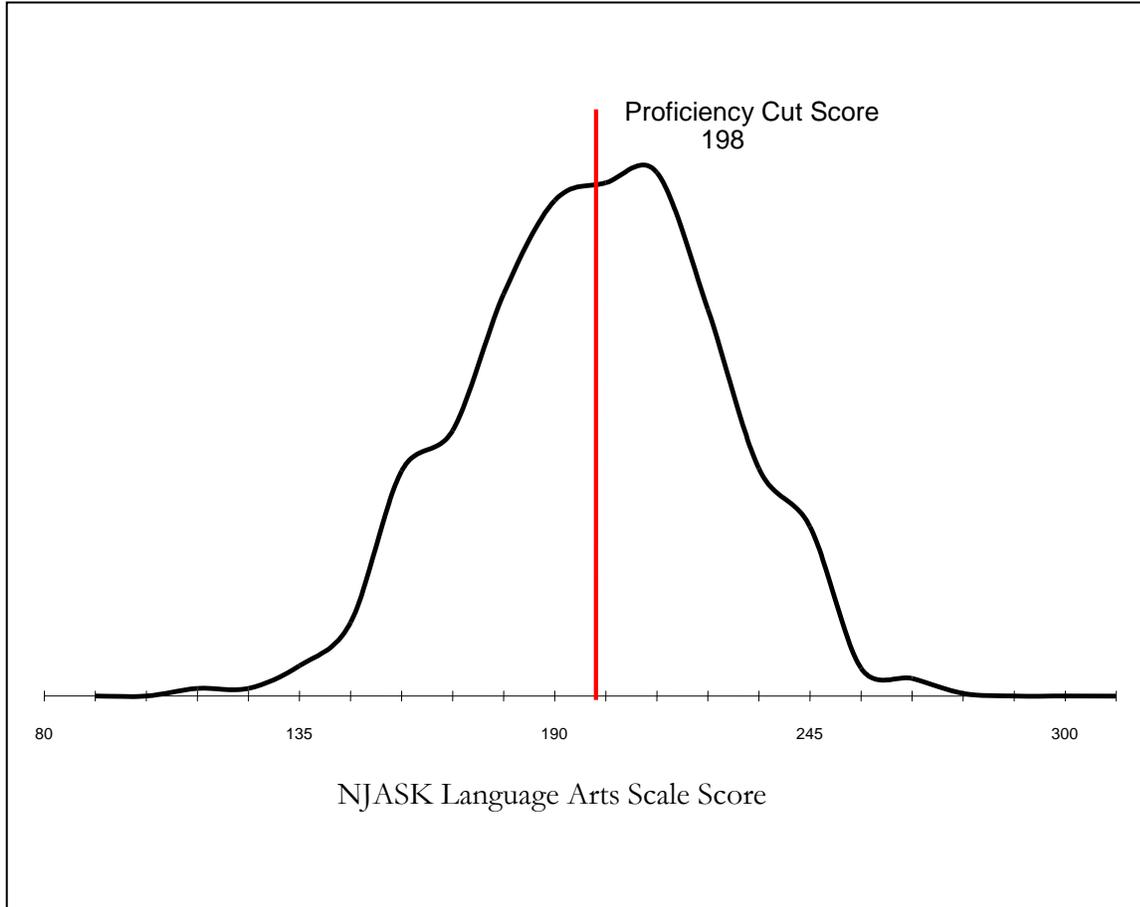
School name	No. Eligible students	Year INOI 05_06	No. Eligible non-English native language	No. Eligible special ed	Strata	Group (1=T; 0=C)	
School 17	189	Yr5	43	80	1	1	Lrg schools n>100
School 7	98	Yr5	38	28	1	0	
School 6	107	Yr5	16	37	2	1	
School 1	108	Yr5	0	34	2	0	
School 11	182	Yr1	56	86	3	0	
School 16	90	Yr5	3	36	4	1	Med schools n=50-99
School 12	79	Yr5	1	43	4	0	
School 5	64	Yr5	3	37	5	1	
School 3	53	Yr5	12	30	5	0	
School 4	80	Yr4	0	40	6	1	
School 19	95	Yr3	0	68	6	0	
School 15	69	Yr1	34	26	7	1	
School 18	55	Yr1	11	26	7	0	Small schools n=25-49
School 10	48	Yr4	1	5	8	1	
School 2	39	Yr4	0	15	8	0	
School 14	37	Yr4	6	13	9	1	
School 9	33	Yr3	4	5	9	0	
School 8	27	Yr2	0	14	10	1	

### 3.A.1.3 Student Eligibility and Sample Size

For students to be eligible for the targeted evaluation in Year 1, they had to be enrolled in one of the eligible middle schools and be in grades 6, 7, or 8. Furthermore, student eligibility was based on their reading subtest score on the 2007 NJASK. In New Jersey, anyone scoring below a 200 is considered “partially proficient,” which is the lowest category possible. Scores 200–249 are “proficient,” while scores above 249 are “advanced proficient.” The cut-off scores for student eligibility were set by NPS, based on one standard deviation from the norm. An example of student scores and the cut-off for eligibility is represented graphically in Figure 4. The same student eligibility requirements are used for students in both treatment and control schools. They must score below the cut-off score on the NJASK to be included in the evaluation. The specific cut-off scores for each grade are the following:

- 6th grade = 198
- 7th grade = 186
- 8th grade = 192

**Figure 4. Language Arts scale score frequency distribution for 19 evaluation schools (Grade 5)**



In Years 2, 3 and 4, a second, third and fourth cohort of 6th graders were added to the evaluation. The cut score of 198 applied to these cohorts as well. Transfer students without an NJASK score were not eligible to participate in the targeted evaluation. In Year 4, 1070 students participated in the Striving Reader evaluation, with 577 attending treatment schools and 493 attending control schools.

### 3.A.2 Description of the Counterfactual

Thirty-six language arts classrooms in grades 6, 7, and 8 were observed by trained Westat researchers in the spring of 2007. Twenty-one of these classrooms were READ 180 classrooms, while the remainder were control classrooms.

Based on these observations, the number of students per classroom varied from 3 to 25. The average class size was 15. Using NPS data, there is a statistically significant difference in the class size by treatment group (see Table 35).

**Table 35. Class size comparison, treatment versus control**

	<b>N</b>	<b>Mean</b>	<b>sd</b>	<b>Sig diff?</b>
<b>Control classrooms</b>	<b>101</b>	<b>18.02</b>	<b>5.63</b>	<b>*</b>
<b>Treatment classrooms</b>	<b>43</b>	<b>15.70</b>	<b>5.09</b>	

T-test significant at the .05 level.

In terms of the physical environment, observers were asked to rate the classroom on a scale of 1 to 4, with 4 being the highest possible score. As Table 36 shows, all observed classrooms scored well on the availability of books in the classroom and the resources displayed on the classroom walls. However, as might be expected, the treatment classrooms had significantly more technology-related resources available than control classrooms.

**Table 36. Physical environment of classrooms**

	<b>Treatment</b>		<b>Control</b>		<b>Sig diff?</b>
	<b>Mean</b>	<b>sd</b>	<b>Mean</b>	<b>sd</b>	
<b>Technology</b>	<b>3.57</b>	<b>.598</b>	<b>2.93</b>	<b>.884</b>	<b>*</b>
<b>Bulletin boards/walls (e.g., student samples word walls)</b>	<b>3.29</b>	<b>.717</b>	<b>3.33</b>	<b>.724</b>	
<b>Availability of books</b>	<b>3.52</b>	<b>.512</b>	<b>3.27</b>	<b>.799</b>	

T-test significant at the .05 level.

During the class period, observers also were asked to identify the literacy resources being used by students. Table 37 shows the results from these yes/no questions. Students in all classrooms used the same set of literacy resources, except in three cases: textbook use, use of computers, and use of audio equipment. In these cases, the treatment curriculum focuses heavily on these resources (i.e., eBooks, instructional software, and independent reading with CDs), so there is little surprise that treatment classrooms would score higher in these areas.

**Table 37. Literacy resources used in observed classrooms**

	Treatment		Control		Sig diff?
	% yes	sd	% yes	sd	
Reading or discussion of novels/stories/poems	95%	.229	100%	.000	
Textbook	79%	.419	21%	.426	*
Articles	47%	.514	21%	.426	
Students all read same text	74%	.452	77%	.439	
Workbook/worksheets used	76%	.436	73%	.458	
Video/film/television	42%	.507	14%	.363	
Notebooks/journals	81%	.402	93%	.258	
Computer use	95%	.218	20%	.414	*
Audio	80%	.410	7%	.258	*

T-test significant at the .05 level.

In terms of organization, climate, and culture, all classrooms scored very high on a 1 to 5 scale with 5 being the highest possible score. As a safe environment for struggling readers (i.e., struggling readers risked making mistakes, got a lot of encouragement, and read without ridicule), treatment classrooms scored significantly higher than control classrooms (see Table 38).

**Table 38. Classroom organization**

	Treatment		Control		Sig diff?
	Mean	sd	Mean	sd	
Classroom time well-structured and transitions were well defined	4.48	.190	4.33	.211	
Participation of all students actively encouraged	4.38	.201	4.27	.248	
Safe environment for struggling readers	4.57	.130	4.07	.228	*

T-test significant at the .05 level.

Student groupings were recorded once every 10 minutes during the classroom period. Table 39 shows the time spent in each grouping. These data show that students in treatment classrooms spent more time in small groups and working individually than students in control classrooms (who spent more time in whole class work).

**Table 39. Average number of occasions that the following student groupings were observed**

	Treatment		Control		Sig diff?
	Number	sd	Number	sd	
Whole class	2.95	1.56	4.67	2.26	*
Small group	5.14	1.35	3.00	2.00	*
Individual	3.38	2.91	1.53	2.39	*

T-test significant at the .05 level.

### **3.A.3 Data Collection Plan**

#### **3.A.3.1 Student Measures**

To determine the effect of the targeted intervention on students, the scale score results of the Vocabulary, Reading Comprehension, and Language Arts subtests of SAT 10 were used.<sup>19</sup> The SAT 10 uses vertical scaling and norm-referenced scores to ensure scale scores can be directly compared when students are assessed with different grade-level assessments at different times, and students' scores also can be compared with a larger national sample of scores on the same tests.

The Vocabulary subtest includes concepts such as synonyms, multiple-meaning words, and use of context clues to decipher the meaning of unknown words. The Reading Comprehension assesses students' reading achievement using text read for enjoyment (e.g., fiction, poetry), text read for informational or expository purposes (e.g., science, textbook material), and everyday functional text (e.g., directions, labels, forms). This subtest also measures students' ability to initially understand explicit details in a passage, interpret information in a passage, critically analyze and evaluate information in a passage, and apply appropriate reading strategies.

The Language Arts subtest is divided into three sections. The first focuses on language mechanics, including capitalization, punctuation, and usage. The second focuses on language expression, including writing strategies and sentence structure knowledge. The final section of the Language Arts subtest also focuses on language expression but on a higher level than the previous section. Students analyze written passages for the assessment of how well they recognize extraneous information and descriptive language and the combining of simplistic sentences.

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<sup>19</sup> Abbreviated battery.

Data on the reliability of the SAT 10 are restricted to Kuder-Richardson Formula 20 (KR-20) internal-consistency estimates. The reliability for the abbreviated battery of Reading subtests is .89. The SAT 10 thus appears to hold sufficient reliability to support data inferences about the performance of groups of students.

In addition to the SAT 10, the authors also estimated whether the intervention had an effect on student attendance. From district records, the authors constructed a student-level variable that was the number of unexcused absences from school for each student for the school year. Overall in Year 4, students missed an average of 12.2 days of school as compared to 23.2 average missed days in Year 1 (see Table 40). In Year 4 there was not a significant difference between treatment and control schools for the number of days missed ( $t[472] = 1.54, p = .124$ ).

**Table 40. Average days of school missed in Year 4**

	<b>Average number of days missed</b>
<b>Overall</b>	<b>12.18</b>
<b>Control</b>	<b>13.22</b>
<b>Treatment</b>	<b>11.00</b>

### **3.A.3.2 Schedule of Data Collection in Year 4**

Data collection for Year 4 involved testing students in grades 6, 7, and 8 from May 17 to June 4, 2010. Two weeks prior to data collection, 17 field assessors attended a 1-day training program in Newark that was conducted by Westat. Training topics covered the study description and background, administrative procedures, professional conduct, confidentiality, and student testing protocols. The goals of the training were the following:

- Increase the accuracy, quality and relevance of collected data
- Standardize data collection techniques and procedures
- Provide explicit procedures for assessors to follow

After training, testing materials were sent to each assessor. Approximately 2 weeks after training, assessors began testing all eligible students in grades 6, 7, and 8. The initial testing occurred over a 2-week period. Field assessors also conducted quality assurance checks of each student’s answer sheet to verify completeness and demographic information and to remove stray marks before scoring by

Pearson Assessment (formerly Harcourt Assessment). Table 41 provides an overview of the data collection schedule for the spring of 2010.

**Table 41. Data collection schedule for Year 4**

Data collection activity	Date
Assessor training	May 7, 2010
Mail data collection materials to assessors	May 10 – May 12, 2010
Conduct test administration	May 17 – May 26, 2010
Make up testing	May 25 – June 4, 2010
Answer sheets sent to Pearson	July 7, 2010

### 3.A.4 Summary of Analytic Approach

#### 3.A.4.1 Model Specifications

To determine the effect of READ 180, an intent-to-treat (ITT) analysis was conducted based on repeated cross-sectional data, using a multilevel software package (HLM). A linear two-level model was used, with student and school as the two levels. Achievement for students within schools was predicted by a series of student and school characteristics. Student covariates were fixed across schools with no interactions. For the attendance outcome, a Poisson distribution was used (the outcome is a count of days absent during the school year). An example of HLM output is provided in Appendix B.

#### 3.A.4.2 Selection of Analytic Variables

The student outcomes for the targeted intervention are the three reading achievement subscores from the SAT 10 (i.e., Reading Comprehension, Vocabulary, and Language Arts), and school attendance (the number of unexcused absences). Table 42 shows the covariates used in the analytic model. In accordance with the recommendations of the Committee for Proprietary Medicinal Products (2004), the authors identified all covariates prior to data collection. The categorical variables were dummy-coded, and all variables (except the treatment indicator) were centered on the grand mean.

**Table 42. Covariates for impact analysis**

	<b>Data format</b>	<b>Coding</b>
<b>Entered at school level</b>		
Treatment assignment	Dichotomous	1=Treatment 0=Control
Number of eligible students Year in need of improvement	Continuous Count	1=1st year 2=2nd year 3=3rd year 4=4th year 5=5th year
Number of eligible ELL students Number of eligible Spec Ed students	Continuous Continuous	
<b>Entered at student level</b>		
Grade 6	Categorical	1=yes 0=no
Grade 7	Categorical	1=yes 0=no
Grade 8	Categorical	1=yes 0=no
Special education identification	Dichotomous	1=yes 0=no
Free lunch eligibility	Dichotomous	1=yes 0=no
ELL	Dichotomous	1=yes 0=no
Gender	Dichotomous	1=yes 0=no
African American	Dichotomous	1=yes 0=no
Hispanic	Dichotomous	1=yes 0=no
Baseline reading score (NJASK)	Continuous	

### **3.A.4.3 Analysis Groups**

Students were divided into three analytic groups to examine the overall effect of 1-3 years of the intervention (see Table 43). The first analytic group includes all students who were given the opportunity to receive 1 year of intervention. The second group includes all students who were given the opportunity to receive 2 years of treatment. Finally, the third group includes students who were given the opportunity to receive 3 years of intervention.

Table 43. Analysis groups by year and grade

	Year 1		Year 2		Year 3		Year 4			6th grade	7th grade	8th grade
	6th grade	7th grade	8th grade	6th grade	7th grade	8th grade	6th grade	7th grade	8th grade			
(1) Availability of 1 year of intervention for 6th, 7th, & 8th graders N = 2555	✓	✓	✓	✓			✓			✓		
(2) Availability of 2 years of intervention for 7th & 8th graders N =1520					✓	✓		✓				✓
(3) Availability of 3 years of intervention for 8th graders N = 712										✓		✓

### 3.A.4.4 Missing Data

Some data were missing for one of the covariates listed in Table 42: free and reduced lunch status. However, the amount of missing data was minimal, so no imputation was conducted. Some data also were missing for student outcomes as shown in Table 44.<sup>20</sup> Non-random missing data could compromise the internal validity of the evaluation if it led to the treatment and control groups no longer being comparable. Overall, 90 percent of those 1070 eligible students in Year 4 took the SAT 10 (441 control students and 518 treatment students). Year 4 students who did not have SAT 10 results were compared to those students with SAT 10 scores, and no statistically significant difference was found on their baseline NJASK scores ( $t[99] = .32, p = .75$ ). The lack of a difference increases confidence that missing data has not compromised treatment and control group comparability.

**Table 44. Missing data for student outcomes, by analytic group**

Analytic group	Outcome variables	Total number tested	Number of missing	Missing %
(1) Availability of 1 year of treatment for 6th, 7th, & 8th graders (combined)	Comprehension	2555	202	7.91%
	Vocabulary	2555	298	11.66%
	Language Arts	2555	336	13.15%
	Attendance	2555	255	9.98%
(2) Availability of 2 years of treatment for 7th & 8th graders	Comprehension	1520	102	6.71%
	Vocabulary	1520	113	7.43%
	Language Arts	1520	120	7.89%
	Attendance	1520	416	27.37%
(3) Availability of 3 years of treatment for 8th graders	Comprehension	712	74	10.39%
	Vocabulary	712	74	10.39%
	Language Arts	712	77	10.81%
	Attendance	712	291	40.87%

<sup>20</sup> Consistent with the analysis plan, the authors did not impute missing data for outcome variables.

### **3.A.4.5 Subgroup Analyses**

To examine the effect of treatment on specific subpopulations of students, students in each analytic group were divided into the following five subgroups:

1. Female students
2. Male students
3. African American students
4. Hispanic students
5. Special education students.

## **3.B Description of the 1st, 2nd, 3rd and 4th Year Samples**

### **3.B.1 Characteristics of Schools and Students**

#### **3.B.1.1 Schools**

Nineteen middle schools were selected for the targeted intervention in Year 1. Of these schools, 10 were randomly assigned to receive READ 180, and 9 were randomly assigned to the control condition. Randomization was maintained in Year 4 and all schools remained part of the sample.

#### **3.B.1.2 Students**

Figure 5 shows the evolution of the student sample throughout the four years of the project.

Figure 5. Flow of students in the targeted intervention

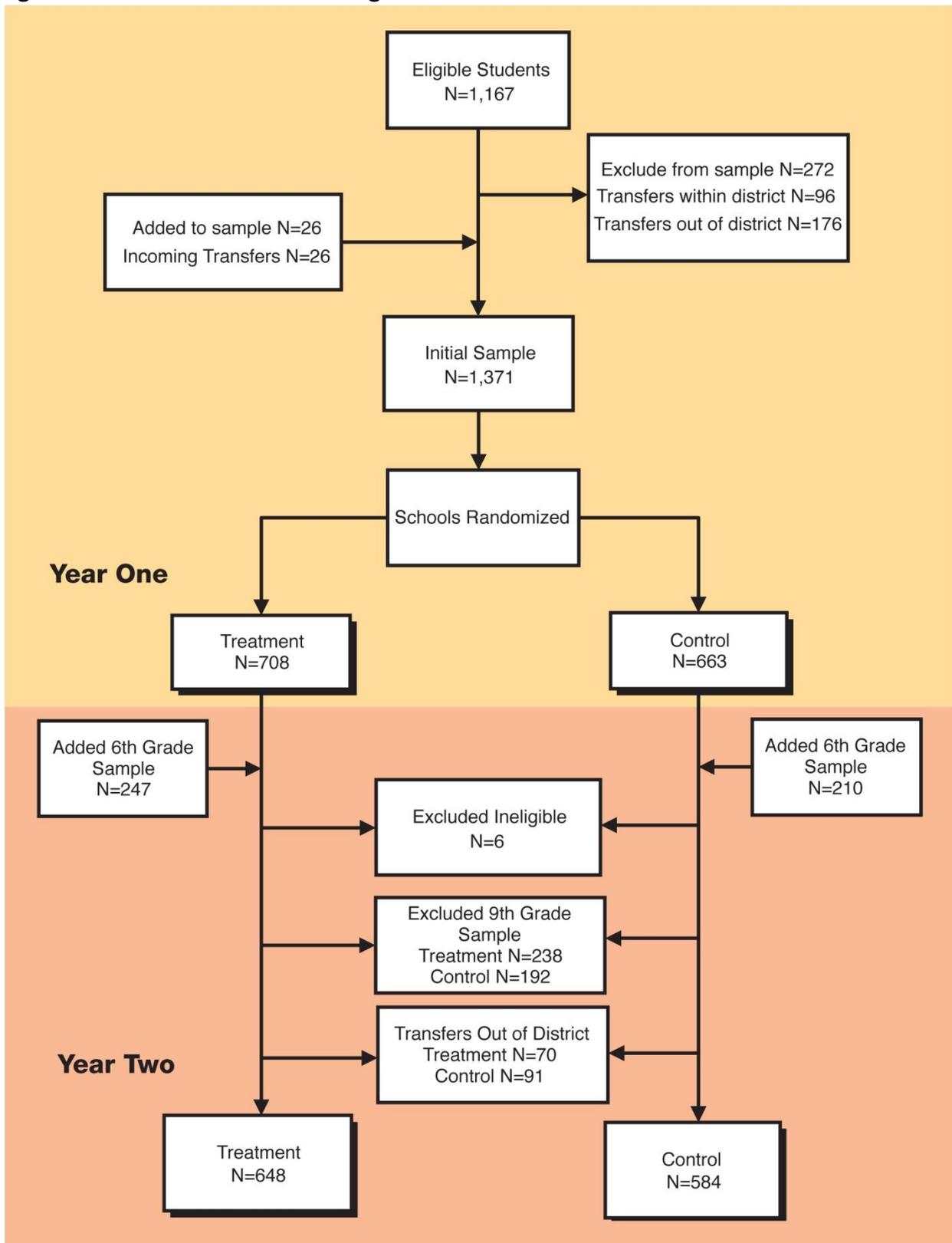
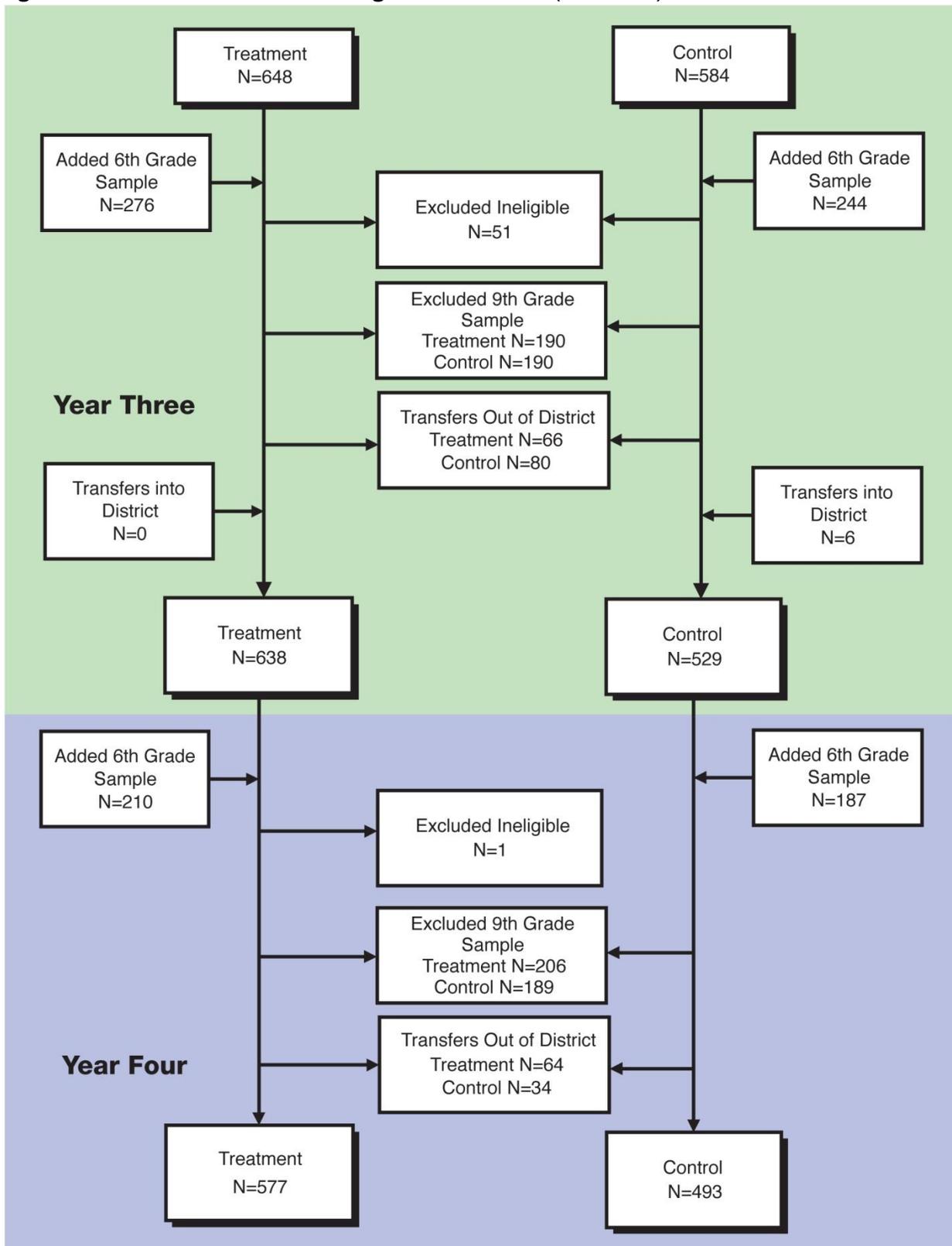


Figure 5. Flow of students in the targeted intervention (continued)



\* The numbers in this report differ from the NPS annual performance reports. For evaluation purposes, Westat considers students as they were originally assigned to a condition while NPS reports students' current school.

Nonrandom attrition of individuals from randomly assigned groups can cause the groups to be no longer comparable and can have the same effects as self-selection bias, but during the experiment rather than before it. The What Works Clearinghouse (WWC) (2008) has established benchmarks for tolerance levels of attrition bias. Attrition rates have been examined for each of the three analytic groups, and the results are presented in Table 45. The overall attrition rates for the three analytic groups range from 6.8 percent to 16.6 percent. Differential attrition rates between the treatment and control groups were all below 4 percent. None of the differences in attrition rates between the treatment and control groups are statistically significant. These overall and differential attrition rates are within the acceptable range specified by WWC standards.

**Table 45. Overall and differential attrition rates by analytic group**

Analytic Group	Analytic Sample Attrition Rate			
	Treatment	Control	Overall Attrition	Differential Attrition
(1) Availability of 1 year of treatment for 6th, 7th, & 8th graders	6.3%	7.3%	6.8%	1.1%
(2) Availability of 2 years of treatment for 7th & 8th graders	14.6%	18.3%	16.6%	3.7%
(3) Availability of 3 years of treatment for 8th graders	14.6%	17.0%	16.2%	2.4%

The demographics of the 1,070 students eligible for the targeted intervention in Year 4 evaluation are similar to that of the students in NPS as a whole in several respects. Most of the Striving Readers students are African American (55 percent) or Hispanic (42 percent), compared to 55 and 43 percent in NPS as a whole. Table 46 provides detailed demographic data for Year 4 students in the treatment and comparison groups.

Table 46. Characteristics of Year 4 students in the targeted intervention, by treatment status

Number (column %)	Students in treatment schools	Students in control schools	All students
Total number of students	577 (54%)	493 (46%)	1,070
Average no. of students per school	57.7	54.8	56.3
<b>Grade</b>			
6th grade	35%	38%	36%
7th grade	34%	32%	33%
8th grade	31%	30%	30%
<b>Gender</b>			
Male	60%	63%	61%
Female	40%	37%	39%
<b>Status</b>			
Economically disadvantaged	62%	61%	62%
ELLs	15%	11%	13%
Special education	46%	42%	44%
<b>Race/ethnicity</b>			
African American	53%	57%	55%
Hispanic	43%	41%	42%
Caucasian	1%	1%	1%
Other	2%	1%	1%

### 3.B.2 Tests of Equivalence for Treatment and Control Schools

Equivalence between treatment and control schools was tested in Year 1. Of the seven baseline variables tested for balance, one variable demonstrated a significant difference between treatment and control groups. As shown in Table 47, treatment schools had significantly more students eligible for free and reduced price lunch than control schools. However, this variable was incorporated into the analysis model as a student-level covariate and should not influence the impact estimates.

**Table 47. Balance test for treatment and control groups, Year 1**

<b>Variable</b>	<b>Control Mean</b>	<b>Treatment Mean</b>	<b>DF</b>	<b>t Value</b>	<b>Pr &gt;  t </b>
<b>Males</b>	<b>54.75%</b>	<b>57.20%</b>	<b>1368</b>	<b>-0.91</b>	<b>0.361</b>
<b>Eligible free/reduced lunch</b>	<b>83.86%</b>	<b>91.38%</b>	<b>1368</b>	<b>-4.27</b>	<b>&lt;.0001*</b>
<b>ELL</b>	<b>3.34%</b>	<b>2.07%</b>	<b>1368</b>	<b>0.92</b>	<b>0.357</b>
<b>Special education student</b>	<b>29.08%</b>	<b>28.33%</b>	<b>1368</b>	<b>0.28</b>	<b>0.776</b>
<b>Rec'd supplemental reading instruct</b>	<b>20.42%</b>	<b>21.49%</b>	<b>1368</b>	<b>-0.57</b>	<b>0.570</b>
<b>African American</b>	<b>71.13%</b>	<b>70.07%</b>	<b>1368</b>	<b>0.40</b>	<b>0.688</b>
<b>Baseline state assessment score</b>	<b>176.63</b>	<b>177.28</b>	<b>1368</b>	<b>-0.74</b>	<b>0.458</b>

Because the addition of new cohorts in Years 2, 3 and 4, balance tests were repeated for each year. In Year 2, none of the eight variables tested demonstrated a significant difference between treatment and control groups. However, the balance tests run on the Year 3 analytic groups indicated significant differences between the treatment and control groups on the percentage of students eligible for free/reduced price lunch in analytic groups 1. No significant differences were found between the treatment and control groups in the Year 4 sample. The full results of the balance tests are presented in Appendix B.

### **3.C Effects on Students**

Effects on students in each of the three analytic groups are presented in this section. Two aspects of the results are discussed for each group: whether any of the results are statistically significant at the .05 level, and whether any of the results reach an effect size threshold of .20. It has been noted that when considering the practical importance of effect sizes, the context of the type of outcome being measured and the sample being studied should be taken into account (Hill, Bloom, Black, & Lipsey, 2008). Effect sizes were calculated using Glass's  $\Delta$  (Rosenthal, 1994) and represent a change in standard deviation due to being part of the treatment condition. For example, an effect size of .25 indicates that average scores for students in the treatment group are a quarter of a standard deviation higher than students' scores in the control group (see Appendix C for a table of standard deviations used to calculate effect sizes).

Following the summary of the findings, tables are provided that include the means, effect sizes, and *p*-values for treatment and control groups. Furthermore, Appendix C includes detailed tables of

model results. The Bloom “No-Show”<sup>21</sup> rates were calculated for each analytic group and were found to be quite low, between 1 and 3 percent. As a result, the Bloom adjustment was not used to convert the ITT estimates to treatment-on-treated (TOT) impact estimates.

### 3.C.1 Analytic Group 1

Analytic Group 1 includes the 6th, 7th, and 8th graders from the Year 1 sample; and the additional cohorts of 6th graders from subsequent years. The goal of this analytic group was to determine if treatment students outperformed students in the control group after 1 year of potential exposure to READ180. All grades were combined to provide the largest possible sample size, thus maximizing power.

No significant effects were found for this group as a whole. Moreover, effect sizes were small (see Table 48).

**Table 48. Analytic Group 1 Overall—effect of READ 180 after 1 year**

Outcome	Unadjusted means (SD)		Regression-adjusted means		Estimated Impact	Effect size	p-value
	Control	Treatment	Control	Treatment			
Attendance	21.74 (20.80)	23.51 (21.52)	19.27	19.33	0.06	0.00	0.443
Vocabulary	611.77 (31.65)	615.37 (29.98)	613.37	614.76	1.39	0.04	0.319
Comprehension	608.46 (27.98)	610.51 (27.95)	609.11	610.24	1.13	0.04	0.344
Language Arts	597.88 (26.58)	598.66 (24.91)	598.40	599.10	0.70	0.03	0.397
Number of students	1205	1350					
Number of schools	9	10					

Subgroup analyses were then performed on this analytic group. Significant treatment effects were found for special education students on the Vocabulary subtest (effect size = 0.13,  $p=0.047$ ). Tables 49–53 provide the results of the subgroup analyses for Analytic Group 1.

<sup>21</sup> “A situation in which some persons randomly assigned to the program do not participate, but follow-up data are available for these persons as well as for all participants and control group members” (Bloom, 1984, p. 226).

Table 49. Analytic Group 1 Females—effect of READ 180 after 1 year

Outcome	Unadjusted means (SD)		Regression-adjusted means		Estimated effect	Effect size	p-value
	Control	Treatment	Control	Treatment			
Attendance	21.84 (20.93)	24.16 (22.34)	18.50	18.60	0.10	0.00	0.348
Vocabulary	609.93 (30.94)	615.10 (30.53)	612.44	613.77	1.33	0.04	0.609
Comprehension	610.70 (25.99)	613.90 (28.19)	612.05	614.00	1.94	0.07	0.190
Language Arts	602.72 (26.20)	604.14 (24.88)	603.00	605.11	2.10	0.08	0.137
Number of students	512	563					
Number of schools	9	10					

Table 50. Analytic Group 1 Males—effect of READ 180 after 1 year

Outcome	Unadjusted means (SD)		Regression-adjusted means		Estimated effect	Effect size	p-value
	Control	Treatment	Control	Treatment			
Attendance	21.66 (20.72)	23.02 (20.91)	19.90	19.92	0.02	0.00	0.770
Vocabulary	613.15 (32.13)	615.61 (29.59)	613.60	615.91	2.32	0.07	0.089
Comprehension	606.75 (29.30)	608.07 (27.56)	606.83	607.93	1.10	0.04	0.462
Language Arts	594.26 (26.31)	594.77 (24.22)	594.96	595.12	0.16	0.01	0.902
Number of students	693	786					
Number of schools	9	10					

Table 51. Analytic Group 1 African American—effect of READ 180 after 1 year

Outcome	Unadjusted means (SD)		Regression-adjusted means		Estimated effect	Effect size	p-value
	Control	Treatment	Control	Treatment			
Attendance	21.40 (20.45)	24.05 (22.41)	19.40	19.51	0.11	0.01	0.162
Vocabulary	612.43 (32.42)	616.32 (30.16)	614.22	615.52	1.30	0.04	0.492
Comprehension	607.97 (27.23)	610.68 (27.86)	607.77	610.26	2.48	0.09	0.287
Language Arts	597.02 (25.60)	599.53 (25.03)	597.63	599.35	1.73	0.07	0.160
Number of students	705	740					
Number of schools	9	10					

**Table 52. Analytic Group 1 Hispanic—effect of READ 180 after 1 year**

Outcome	Unadjusted means (SD)		Regression-adjusted means		Estimated effect	Effect size	p-value
	Control	Treatment	Control	Treatment			
Attendance	22.09 (21.24)	23.38 (20.55)	15.76	16.05	0.29	0.01	0.040*
Vocabulary	611.18 (30.82)	614.31 (29.71)	612.51	615.33	2.81	0.09	0.154
Comprehension	609.46 (29.13)	610.47 (28.20)	611.53	612.64	1.10	0.04	0.510
Language Arts	599.05 (28.11)	598.11 (24.94)	599.61	599.36	-0.25	-0.01	0.833
Number of students	485	576					
Number of schools	9	10					

\*Significant at 0.05 level.

**Table 53. Analytic Group 1 Special Education—effect of READ 180 after 1 year**

Outcome	Unadjusted means (SD)		Regression-adjusted means		Estimated effect	Effect size	p-value
	Control	Treatment	Control	Treatment			
Attendance	20.80 (20.06)	22.90 (19.81)	19.48	19.52	0.04	0.00	0.685
Vocabulary	603.45 (31.83)	608.34 (32.17)	604.11	608.13	4.03	0.13	0.047*
Comprehension	600.64 (27.05)	601.51 (27.36)	600.19	601.51	1.32	0.05	0.417
Language Arts	588.85 (23.92)	589.31 (22.31)	588.63	589.69	1.06	0.04	0.459
Number of students	486	543					
Number of schools	9	10					

\*Significant at 0.05 level.

Table 54 summarizes statistically significant findings and effect sizes for Analytic Group 1. Special education students in the treatment group had significant higher Vocabulary subtest scores than their counterparts in the control group. Hispanic students in the treatment group had more absent days compared to the Hispanic students in the control group. However, the difference is negligible since the effect size is only 0.01. For the rest of the subgroups, READ 180 program had no impact on students after one year.

**Table 54. Analytic Group 1 Summary—effect of READ 180 after 1 year**

Subgroup	Vocabulary		Comprehension		Language Arts		Attendance	
	ES	Sig	ES	Sig	ES	Sig	ES	Sig
Overall								
Female								
Male								
African American								
Hispanic								0.01 *
Special education	0.13	*						

### 3.C.2 Analytic Group 2

Analytic Group 2 includes the 7th and 8th graders in Year 2 (who were 6th and 7th graders in Year 1), the 7th graders in Year 3 (who were 6th graders in Year 2) and the 7th graders in Year 4. This group combines all students who had 2 years of potential exposure to the intervention. Analytic Group 2 showed overall effects in Comprehension (see Table 55). However, the effect size of this finding was relatively small, less than the .20 threshold.

**Table 55. Analytic Group 2 Overall—effect of 2 years of READ 180**

Outcome	Unadjusted means (SD)		Regression-adjusted means		Estimated effect	Effect size	p-value
	Control	Treatment	Control	Treatment			
Attendance	23.06 (22.44)	22.17 (20.22)	19.09	19.14	0.05	0.00	0.515
Vocabulary	629.48 (27.16)	629.06 (26.82)	628.20	629.83	1.63	0.06	0.183
Comprehension	622.58 (26.24)	623.06 (25.33)	620.85	624.44	3.59	0.14	0.019*
Language Arts	611.28 (25.66)	609.56 (24.64)	609.12	611.23	2.11	0.08	0.295
Number of students	706	814					
Number of schools	9	10					

\*Significant at 0.05 level.

In subgroup analysis, significant treatment effects were found in female students' attendance (effect size = 0.01,  $p= 0.01$ ), male students' Comprehension scores (effect size = 0.21,  $p= 0.004$ ), African American students' Comprehension scores (effect size = 0.15,  $p=0.045$ ) and special education students' Comprehension scores (effect size = 0.22,  $p=0.007$ ).

Female students who participated in READ 180 had more absent days than female students in the control group. However, the difference is very small with an effect size of 0.01. Special education, African American and male students apparently have benefited from 2 years of exposure to READ 180 as demonstrated by their scores in Comprehension. Tables 56 – 60 present the full subgroup results.

**Table 56. Analytic Group 2 Female—effect of 2 years of READ 180**

Outcome	Unadjusted means (SD)		Regression-adjusted means		Estimated effect	Effect size	p-value
	Control	Treatment	Control	Treatment			
Attendance	21.86 (21.19)	23.60 (19.14)	17.12	17.33	0.21	0.01	0.010*
Vocabulary	630.49 (26.04)	629.75 (23.55)	630.00	630.63	0.64	0.02	0.473
Comprehension	626.85 (26.95)	625.63 (25.07)	625.73	626.81	1.08	0.04	0.469
Language Arts	616.83 (25.96)	615.06 (25.35)	615.12	616.60	1.48	0.06	0.327
Number of students	325	340					
Number of schools	9	10					

\*Significant at 0.05 level.

**Table 57. Analytic Group 2 Male—effect of 2 years of READ 180**

Outcome	Unadjusted means (SD)		Regression-adjusted means		Estimated effect	Effect size	p-value
	Control	Treatment	Control	Treatment			
Attendance	24.13 (23.47)	21.06 (20.99)	20.37	20.30	-0.07	0.00	0.452
Vocabulary	628.61 (28.09)	628.57 (28.94)	626.69	629.57	2.88	0.10	0.185
Comprehension	618.94 (25.09)	621.25 (25.39)	617.19	622.40	5.21	0.21	0.004*
Language Arts	606.52 (24.44)	605.68 (23.38)	604.59	607.02	2.43	0.10	0.328
Number of students	381	473					
Number of schools	9	10					

\*Significant at 0.05 level.

Table 58. Analytic Group 2 African American—effect of 2 years of READ 180

Outcome	Unadjusted means (SD)		Regression-adjusted means		Estimated effect	Effect size	p-value
	Control	Treatment	Control	Treatment			
Attendance	22.37 (22.23)	22.21 (20.67)	20.63	20.59	-0.04	0.00	0.713
Vocabulary	628.93 (26.86)	630.82 (26.35)	629.77	631.07	1.30	0.05	0.329
Comprehension	621.05 (26.59)	624.88 (24.43)	621.30	625.28	3.99	0.15	0.045*
Language Arts	608.80 (25.01)	610.38 (23.19)	608.82	611.09	2.26	0.09	0.333
Number of students	396	431					
Number of schools	9	10					

\*Significant at 0.05 level.

Table 59. Analytic Group 2 Hispanic—effect of 2 years of READ 180

Outcome	Unadjusted means (SD)		Regression-adjusted means		Estimated effect	Effect size	p-value
	Control	Treatment	Control	Treatment			
Attendance	24.27 (23.13)	22.48 (19.90)	18.52	18.68	0.16	0.01	0.192
Vocabulary	630.36 (27.85)	627.14 (27.48)	625.89	630.89	5.00	0.18	0.216
Comprehension	624.48 (25.92)	621.25 (25.83)	621.54	623.43	1.90	0.07	0.341
Language Arts	614.54 (26.49)	609.29 (26.38)	609.28	612.77	3.49	0.13	0.064
Number of students	296	361					
Number of schools	7	10					

**Table 60. Analytic Group 2 Special Education—effect of 2 years of READ 180**

Outcome	Unadjusted means (SD)		Regression-adjusted means		Estimated effect	Effect size	p-value
	Control	Treatment	Control	Treatment			
Attendance	23.72 (23.78)	22.97 (20.99)	20.00	20.05	0.05	0.00	0.607
Vocabulary	621.31 (26.78)	621.49 (26.60)	619.98	622.22	2.24	0.08	0.240
Comprehension	614.02 (25.24)	615.25 (24.59)	611.20	616.72	5.52	0.22	0.007*
Language Arts	601.40 (24.80)	600.46 (23.18)	600.37	602.12	1.76	0.07	0.504
Number of students	283	361					
Number of schools	9	10					

\*Significant at 0.05 level.

Table 61 summarizes statistically significant findings and effect sizes greater than 0.20 for Analytic Group 2. The READ 180 curriculum significantly increased the average male, African American and special education students' Comprehension subtests scores.

**Table 61. Analytic Group 2 Summary—effect of 2 years of READ 180**

Subgroup	Vocabulary		Comprehension		Language Arts		Attendance	
	ES	Sig	ES	Sig	ES	Sig	ES	Sig
Overall			0.14	*				
Female							0.01	*
Male			0.21	*				
African American			0.15	*				
Hispanic								
Special education			0.22	*				

\*Significant at 0.05 level.

### 3.C.3 Analytic Group 3

Analytic Group 3 is comprised of the 8th graders in Year 3 (who were 6th graders in Year 1) and 8th graders in Year 4 (who were 6th graders in Year 2). The goal of this analysis group was to determine if treatment students who had 3 years of READ 180 outperformed students in the control group. No significant differences between treatment and control group students were found (see Table 62).

**Table 62. Analytic Group 3 Overall—effect of 3 years of READ 180**

Outcome	Unadjusted means (SD)		Regression-adjusted means		Estimated effect	Effect size	p-value
	Control	Treatment	Control	Treatment			
Attendance	15.25 (14.11)	15.54 (12.37)	15.90	15.74	-0.16	-0.01	0.051
Vocabulary	641.69 (28.64)	642.24 (24.52)	640.95	641.48	0.53	0.02	0.802
Comprehension	641.03 (24.88)	642.82 (22.67)	640.46	642.72	2.26	0.09	0.261
Language Arts	621.67 (23.18)	623.89 (23.97)	621.20	623.87	2.67	0.12	0.114
Number of students	327	385					
Number of schools	9	10					

When we examined subgroup difference, significant treatment effects were found for African American students on the Comprehension subtest (effect size = 0.20,  $p=0.04$ ), and for special education students on Language Arts subtest (effect size = 0.27,  $p=0.02$ ). Our subgroup analysis also indicated that special education students in the treatment group had better school attendance compared to special education students in the control group (effect size = -0.02,  $p=0.014$ ).

Tables 63 – 67 present the full subgroup results.

**Table 63. Analytic Group 3 Female—effect of READ 180**

Outcome	Unadjusted means (SD)		Regression-adjusted means		Estimated effect	Effect size	p-value
	Control	Treatment	Control	Treatment			
Attendance	14.43 (13.07)	15.67 (11.74)	15.36	15.21	-0.15	-0.01	0.088
Vocabulary	639.69 (25.07)	644.43 (22.93)	639.55	642.21	2.66	0.11	0.398
Comprehension	642.40 (23.54)	644.45 (22.31)	643.55	642.98	-0.57	-0.02	0.840
Language Arts	625.00 (22.46)	630.11 (25.70)	624.63	628.18	3.55	0.16	0.197
Number of students	160	167					
Number of schools	9	10					

Table 64. Analytic Group 3 Male—effect of READ 180

Outcome	Unadjusted means (SD)		Regression-adjusted means		Estimated effect	Effect size	p-value
	Control	Treatment	Control	Treatment			
Attendance	16.17 (15.20)	15.43 (12.96)	16.45	16.32	-0.13	-0.01	0.322
Vocabulary	643.70 (31.79)	640.62 (25.57)	641.53	641.15	-0.38	-0.01	0.865
Comprehension	639.66 (26.16)	641.61 (22.92)	638.31	641.88	3.57	0.14	0.178
Language Arts	618.34 (23.47)	619.30 (21.55)	618.05	620.11	2.07	0.09	0.184
Number of students	167	218					
Number of schools	9	10					

Table 65. Analytic Group 3 African American—effect of READ 180

Outcome	Unadjusted means (SD)		Regression-adjusted means		Estimated effect	Effect size	p-value
	Control	Treatment	Control	Treatment			
Attendance	16.29 (15.85)	15.47 (13.15)	19.48	19.20	-0.27	-0.02	0.066
Vocabulary	639.91 (29.24)	642.50 (24.09)	638.58	641.24	2.66	0.09	0.381
Comprehension	638.01 (26.62)	642.43 (23.36)	636.30	641.64	5.34	0.20	0.042*
Language Arts	620.07 (21.82)	623.73 (24.08)	620.00	622.64	2.63	0.12	0.074
Number of students	187	206					
Number of schools	9	10					

\*Significant at 0.05 level.

Table 66. Analytic Group 3 Hispanic—effect of READ 180

Outcome	Unadjusted means (SD)		Regression-adjusted means		Estimated effect	Effect size	p-value
	Control	Treatment	Control	Treatment			
Attendance	13.94 (12.10)	15.80 (11.57)	14.63	14.54	-0.09	-0.01	0.782
Vocabulary	644.25 (27.95)	642.27 (25.04)	649.11	644.59	-4.52	-0.16	0.240
Comprehension	645.05 (22.03)	643.46 (22.14)	645.13	644.67	-0.46	-0.02	0.904
Language Arts	623.84 (24.62)	624.47 (23.49)	624.91	627.71	2.80	0.11	0.476
Number of students	134	171					
Number of schools	6	9					

**Table 67. Analytic Group 3 Special Education—effect of READ 180**

Outcome	Unadjusted means (SD)		Regression-adjusted means		Estimated effect	Effect size	p-value
	Control	Treatment	Control	Treatment			
Attendance	17.46 (16.67)	17.35 (14.73)	19.89	19.58	-0.31	-0.02	0.014*
Vocabulary	632.35 (28.22)	636.18 (23.06)	634.21	634.83	0.61	0.02	0.856
Comprehension	632.68 (25.56)	636.90 (23.26)	632.14	637.18	5.03	0.20	0.116
Language Arts	611.6 (20.20)	617.03 (21.25)	612.37	617.88	5.51	0.27	0.023*
Number of students	150	189					
Number of schools	9	10					

\*Significant at 0.05 level.

Table 68 summarizes statistically significant findings and effect sizes for Analytic Group 3. The READ 180 curriculum has a positive impact on special education students’ scores on the Comprehension subtest. In addition, African American students in the treatment group performed significantly better on the Language Arts subtest than those students in the control group. Special education students in the treatment group had fewer absent days than those students in the control group after participating in READ 180 program for 3 years.

**Table 68. Analytic Group 3 Summary—effect of READ 180**

Subgroup	Vocabulary		Comprehension		Language Arts		Attendance	
	ES	Sig	ES	Sig	ES	Sig	ES	Sig
Overall								
Female								
Male								
African American					0.20	*		
Hispanic								
Special education					0.27	*	-0.02	*

\*Significant at 0.05 level.

### 3.D Summary and Discussion

#### 3.D.1 Overall Findings

Our study indicates that one year of exposure to the READ 180 treatment yielded no significant impact on student literacy performance and their school attendance. However, after two years of

program exposure, significant effect was found in students' reading comprehension. However, this impact was not sustained when we examined those students with 3 years of program exposure. The lack of continued impact could be due to a number of different factors, including teacher training, program implementation fidelity, and student motivation. During Year 4, READ 180 training was not offered to continuing teachers in any of the treatment schools. Moreover, implementation fidelity data indicate that in Year 4, student use of the READ 180 software was below the dosage recommended by the developer. Lastly, after 3 years of using READ 180, a curriculum designed to be implemented over 2 years, student motivation may have suffered from the pacing of the instruction. In Year 5, our evaluation will include a larger sample of students with 3 years of exposure to READ 180. This will provide an opportunity to further investigate the effects of prolonged exposure to the treatment on students' literacy development.

### **3.D.2 Subgroup Findings**

It is important to also consider the significant effects found when looking at specific subgroups of students. READ 180 appeared to be particularly effective for special education students. Special education students with 1 year of exposure to READ 180 scored significantly higher on the Vocabulary subtest than control students. Special education students with 2 years of treatment scored higher than control students on the Comprehension subtest. Special education students with 3 years of exposure to READ 180 program performed significantly better on the Language Arts subtest than students in the control group. The positive impact on student reading Comprehension and Language Arts after 2 to 3 years of program exposure produce effect sizes between 0.22 and 0.27.

These findings indicate that students with more complex educational needs have benefited from participating in the READ 180 program. We hypothesize that, since technology has been shown to play a role in helping special education students improve their literacy skills (Anderson, Anderson & Cherup, 2009), the READ 180 software with its focus on individualized instruction could be the driving force behind the impacts for special education students. In addition, small group instruction has been found to be important for special education students (Center for the Improvement of Early Reading Achievement, 2006). READ 180 also focuses on providing literacy instruction in small group settings, which could specifically benefit students with special needs.

Another subgroup that appeared to benefit from READ 180 was males. Male students with 2 years of exposure scored significantly higher on the Comprehension subtest; this significant finding also

had substantial effect sizes (0.21). However, male students with 3 years of exposure did not demonstrate continued improvement in their reading comprehension.

African American students also showed positive effects from exposure to READ 180. After 2 years of program participation, African American students in the treatment group scored significantly higher in Comprehension subtest than the control group. This effect was also found after 3 years of exposure. These findings concur with extant research indicating that African American students benefit significantly after exposure to the READ 180 program when compared to students that do not receive READ 180 (Scholastic Research and Validation, 2009).

Among Hispanic students, few significant effects were observed. Hispanic students with 2 years of READ 180 exposure scored significantly higher on the Language Arts subtest than the control group. None of the other findings were either statistically or practically significant, including effects after 3 years of exposure to the program.

The finding that the READ 180 curriculum has a positive effect on the literacy skills of male and special education students is promising because these two subgroups of students tend to have low literacy achievement (Institute for Educational Sciences [IES], 2007) and are most in need of effective literacy interventions. Data from the NAEP assessment indicate that there are literacy achievement gaps based on both race and gender (IES, 2007). In addition, compared to regular education students, 30–40 percent fewer special education students meet the criteria for proficiency on state reading assessments (Center on Education Policy, 2009). The findings from this report contribute to the evidence supporting READ 180 as an effective intervention for strengthening the literacy skills of students from subgroups that are at risk of low literacy achievement.

### **3.D.3 Benjamini-Hochberg Multiple Test Adjustment**

Due to the number of tests being run, false discoveries are a concern. Therefore, we subjected all of the findings to Benjamini-Hochberg multiple testing correction (1995). After the adjustment, none of the overall and subgroup differences remained statistically significant (See Table 69).

Table 69. Summary of analysis findings by subgroups

Analysis groups	Outcomes	Overall		Female		Male		African American		Hispanic		Special Education	
		ES	Sig	ES	Sig	ES	Sig	ES	Sig	ES	Sig	ES	Sig
1. One year of exposure	Attendance												
	Vocabulary												✓
	Comprehension												
	Language Arts												
2. Two years of exposure	Attendance												
	Vocabulary												
	Comprehension		✓			✓	✓					✓	✓
	Language Arts												
3. Three years of exposure	Attendance												
	Vocabulary												
	Comprehension							✓	✓				
	Language Arts											✓	✓

✓ Positive at either  $p < .05$  or effect size  $> .20$  before adjustment. None of these findings remained positive after adjustment.



# Implementation of the Whole-School Intervention: Years 1, 2, 3, and 4

## 4

### 4.A Implementation Study Design

Professional development is widely used as a method for training teachers in appropriate methods of instruction, and research indicates it may produce changes in teachers' instructional behaviors over time (Landry, Anthony, Swank, & Monseque-Bailey, 2009; Onchwari & Keengwe, 2008; Wallace, 2009). Professional development can be delivered in various formats, including large-group instruction as well as classroom embedded, individual instruction. Recent literature suggests a combination approach (large-group with individual coaching) may be particularly effective at influencing teacher practices (Cantrell, Burns, & Calloway, 2009). NPS incorporated both large-group professional development and classroom-embedded or "in-school" coaching into the design of its whole-school intervention. Two developers, New Jersey City University and National Urban Alliance (NJCU and NUA), delivered professional development to all 6<sup>th</sup>, 7<sup>th</sup>, and 8<sup>th</sup> grade teachers in the 19 Striving Readers schools. NJCU trainings were available to language arts teachers and NUA trainings were available to content teachers. Teachers who taught both language arts and content areas were eligible to participate in both NJCU and NUA trainings. Both NJCU and NUA paired large-group professional development sessions with in-school, classroom-embedded sessions. The extent to which teachers in Striving Readers schools fully participated in the whole-school intervention was measured and summarized in the four years of the evaluation. Fidelity was measured by obtaining records of teachers' participation in NJCU and NUA large-group trainings, and receipt of in-school coaching visits.

This chapter begins with a description of the developers' roles in implementing the professional development and the curriculum used by each developer. Next, it presents detailed implementation findings for NJCU and NUA teachers in Year 4. Finally, it presents a summary of implementation in Years 1 through 4 along with a description of changes in implementation across the first 4 years of the grant.

## 4.A.1 Developers' Role in Implementation

The initial role of the developers was to provide professional development to teachers, coaches, RTCs, and building administrators through the summer institutes; large-group sessions during the school year; and ongoing in-school coaching visits. As the project evolved over time the developers engaged in more in-school coaching and less on large-group training, and focused training more for teachers, not other staff. Each professional development curriculum is described in detail in the following sections.

The role of NJCU in Year 4 was to provide language arts teachers and literacy coaches with a 1-day<sup>22</sup> large-group training session during the school year and 12 in-school coaching visits. This was a decrease in professional development days from previous years.<sup>23</sup> The goals of these visits are to provide assistance to teachers through modeling and discussion of classroom practices such as developing vocabulary, using graphic organizers, establishing routines for silent reading, and improving reading comprehension strategies. The number of in school visits remained the same in Year 4 as in Year 3 of the grant (5 visits in Year 1; 10 visits, Year 2; 12 visits, Year 3; 12 visits, Year 4).

NUA, the second professional development provider, provides professional development for teachers to support literacy across the content areas. Math, science, and social studies teachers were eligible to receive a 1-day<sup>24</sup> large-group training session during the school year and 15 in-school coaching visits. The amount of large-group professional development training decreased from Year 3 to Year 4. However, the number of in-school visits (15 visits) has remained the same in all four years of the grant.

For a description of and changes to the professional development model over the first 4 years of the grant please see section 1.C.2.1 and Table 4.

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<sup>22</sup> Each day is a 5.5-hour session.

<sup>23</sup> For example in year 3, a 4-day (4 hours each day) summer institute and two 1-day professional development sessions were held during the school year, and 12 in-school coaching visits per school during the school year. See Chapter 1 for a detailed table of changes to the professional development model.

<sup>24</sup> Each day is a 5.5 – hour session.

## 4.A.2 New Jersey City University Professional Development

NJCU’s professional development was designed to introduce and reinforce the use of instructional strategies that enhance vocabulary development, fluency, and reading comprehension. The instructional strategies of NJCU’s large-group trainings primarily address the development of linguistic acquisition, establishing routines for silent reading, and improving reading comprehension and writing strategies. A binder of materials that included the NPS “Language Arts Literacy Policy and Practices for Elementary, Middle and Secondary Schools,” articles, strategies, graphic organizers, and sample activities on literacy strategies was distributed at each NJCU large-group professional development event. Daily feedback surveys also were used to ascertain the additional needs of participants; the workshop topics were revised based on the feedback to better address the identified areas of need. Sample workshop topics included the following:

- *How We Read*—Understanding the complexity of the reading process via prior knowledge; grapho-phonemic, semantic, and syntactical strategies; linguistic competence; and vocabulary enrichment.
- *How We Assess and Teach Reading*—Using assessment and diagnosis, miscue analysis, and strategies that promote success in reading, such as literature groups and circles; oral and silent reading best practices; purpose-setting; question-answer relationships; text annotation; note-taking; anticipation guides and post-reading reflection; double-entry journals; SQ3R; flowcharts, webs, and other graphic organizers; K-W-H-L-S; and personal dictionaries and vocabulary keepers.
- *How We Structure Effective Literacy Programs*—Understanding a brief history of literacy instruction, effective whole-class and small-group instruction, targeted instruction, phonemic awareness, guided reading, balanced literacy, and reading and writing across the curriculum.
- *Best Practices in Writing Instruction*—Gaining a historical perspective on writing instruction, the writing process, spelling and vocabulary development, the reading–writing connection, time management and the writing process, and extending the writing process.
- *How to Promote Speaking and Listening Skills*—Extending the reading–writing process to everyday conversation and enhancing the question/answer relationship.

In Year 4, NJCU was contracted to provide a minimum of 12 on-site coaching visits to each school, focusing on the quality of literacy instruction through observation, demonstration, and coaching. These visits provide an important opportunity for teachers to observe modeling sessions based on site-specific instructional needs and participate in debriefing periods afterward. During the coaching visits, NJCU coaches observe language arts literacy teachers and provide modeling and assistance in

the literacy areas covered in the large-group trainings. The topics discussed and the practices modeled in the classroom include developing vocabulary, establishing routines for silent reading, identifying and using reading comprehension strategies, making reading–writing connections, responding to text with writing prompts, using graphic organizers, initiating summary writing, identifying major themes in texts, engaging in reading and writing of poetry, and developing habits of revising and editing. A debriefing session follows each lesson to allow coaches to describe what they see and identify important details that foster advanced thinking. In subsequent visits, the NJCU coaches observe teachers as they implement the demonstrated lessons.

### 4.A.3 National Urban Alliance Professional Development

The purposes of the summer institute and large-group workshops were to train teachers in cognitive strategies that focus on the teaching, learning, and assessment of advanced thinking; to break down school isolation; to build effective school teams; and to create a community of learners. A strong meta-cognitive and affective component was to be part of each workshop, encompassing such instructional issues as ethnic, gender, and racial bias; multiple intelligences; ELLs; special needs students; and learning styles. NUA’s professional development strategies intend to accelerate the cognitive skills that support literacy development through strategies that are brain based, reflect the cultural learning patterns of students, and address the district’s standards and learning goals.

#### *Thinking Maps Overview*

*Circle Map:* Used for seeking context. This tool enables students to generate relevant information about a topic as represented in the center of the circle. This map often is used for brainstorming, building both **vocabulary and comprehension**.

*Bubble Map:* Designed for the process of describing attributes. This map is used to identify character traits (language arts), cultural traits (social studies), properties (science), or attributes (mathematics). This map develops **vocabulary and comprehension and, in doing so, builds fluency**.

*Double Bubble Map:* Used for comparing and contrasting, such as characters in a story, historical figures, or social systems. This map also is used for prioritizing information within a comparison and building **comprehension**.

*Tree Map:* Enables students to do both inductive and deductive classification and is particularly useful in the sciences. Students learn to create general concepts, main ideas, category headings, supporting ideas and details, merging **literacy and content area skills to make meaning (comprehension)**.

*Brace Map:* Used for identifying the part–whole, physical relationships of an object. This map, like the **Tree Map**, is a visual imagery strategy endorsed by the Strategic Instruction Model (SIM) of the Center for Research on Learning, also noted in the *Reading Next* report as a strategy to develop **comprehension**.

*Flow Map:* Used for showing sequences, order, timelines, cycles, actions, steps, and directions. This map also develops comprehension and fluency skills, as relationships between events are clearly seen.

*Multiflow Map:* Used as a tool for seeking cause/effect relationships. The map expands when showing historical causes and predicting future events and outcomes. This map increases **comprehension**.

*Bridge Map:* Provides a visual pathway for creating and interpreting analogies. This map positively affects **comprehension, vocabulary, and fluency** as analogical reasoning and metaphorical concepts for deeper content learning are developed.

The primary tools NUA uses to connect the content area and literacy are Thinking Maps,<sup>®</sup> which NUA uses as a professional development foundation to assist students in constructing, creating, and communicating meaning in the content areas by developing vocabulary, comprehension, and associated fluency strategies. NUA professional development has tackled these identified skills by connecting them to theoretical research on how the brain develops and how students from urban backgrounds learn.

NUA also promotes content literacy strategies that increase student achievement, as suggested by recognized adolescent literacy specialists (e.g., Kyleene Beers, Janet Allen, Nancy Atwell, Tom Romano, Alfred Tatum, Michael Smith). These specialists agree that students must know the vocabulary of the content discipline, must access prior knowledge of the content or subject area, and must possess study skills such as note-taking in their predominant learning style to assist their ability to recall information from multiple sources. Students must bring skills in reading expository text rather than narrative text to the foreground in content disciplines, must monitor their understanding of the text and adjust speed and concentration to fit the difficulty of the text, and must possess techniques for organizing the information. In addition, they must have mastered basic skills of decoding, fluency, phonics, and comprehension—the learning to read skills—so they can now read to learn. The primary content literacy skills addressed in the NUA’s professional development are vocabulary, fluency, and comprehension developed through defining in context; describing; comparing and contrasting; classifying; sequencing; cause and effect reasoning; part–whole relationships; and analogies.

Teachers have been introduced to various literacy strategies during the first 4 years of the intervention. These strategies include taxonomies (literacy content), Circle Maps, Bubble and Double Bubble Maps, and Flow Maps (Thinking Maps). Additionally, teachers have been introduced to Brace Maps, Multiflow Maps, and Tree Maps while refining their use of the initial thinking maps. To reiterate NUA’s objective, the goal is to have students reach a point where they can proficiently explore and construct meaning from texts: “When students put language to work for them in content classrooms, it helps them to discover organize, retrieve, and elaborate what they are learning” (Vacca, 2000, p. 13).

To reinforce the implementation of the instructional strategies covered in the large-group training, NUA mentors visited each Striving Readers school. Ten school-based sessions were to be conducted to demonstrate (and provide coaching relative to) the application of the strategies presented during the large-group workshops. In the demonstration lessons, NUA mentors focused on the three systems that exist in every classroom: the relationship of teacher to student, the relationship of

teacher to content, and the delivery system. Preceding each lesson, the mentor briefs the teacher on the lesson's content, strategies, and rationale for selection of strategies.

The on-site demonstration lessons were to be conducted with half of each school's Grade 6–8 faculty in attendance during either the morning or afternoon sessions to minimize the need for substitute teachers. NUA's demonstration lessons are designed to address the heterogeneous make-up of the classroom, to be conducted in front of faculty from the school, to use authentic instructional materials, to be cued to existing courses of study and curricular demands, and to vividly illustrate the significant differences in advanced-level thinking that the cognitive strategies would make possible. A debriefing session follows each lesson to allow observers to describe what they saw and identify important details that foster advanced thinking. After the demonstration lessons, the NUA design offers opportunities for teachers to practice what was observed. NUA mentors then use the peer coaching model to share with teachers what they observed and make additional comments.

## **4.B Implementation Results, Year 4**

To determine the degree of fidelity to the whole-school intervention, multiple components were evaluated for each Striving Readers school. Subscores were developed to measure the extent to which each component was implemented. These components are the following:

Large-group training

NJCU

NUA

In-school coaching

NJCU

NUA

Each of these components is discussed in the following sections. Year 4 results are presented, followed by a summary of implementation in Years 1–4 as well as a discussion of changes in implementation between Years 1 and 4.

## 4.B.1 Large-group Implementation Results, Year 4

### 4.B.1.1 NJCU Large-group Training Participation, Year 4

The first component of NJCU’s professional development for language arts literacy teachers was the large-group training session. In alignment with the long-term goals of the project (in particular the embodiment of literacy-focused pedagogy) language arts literacy teachers had the opportunity to attend one large-group training session held during the school year on January 27<sup>th</sup> 2010.<sup>25</sup>

A total of 199 teachers were eligible to receive professional development from NJCU in Year 4. These eligible teachers have been categorized by their level of professional development activities. Table 70 defines the participation levels.

**Table 70. Participation categories for NJCU group training in Year 4**

<b>Component</b>	<b>Full participation</b>	<b>No participation</b>
January Large-group	1 Day	0 days

Table 71 provides the number and percentage of teachers at each of the levels of participation outlined in Table 70.

**Table 71. Number and percentage of NJCU-eligible teachers by level of participation in Year 4**

	<b>Number</b>	<b>%</b>
Full participation	55	27.6
No participation	144	72.4
<b>Total</b>	<b>199</b>	<b>100.0</b>

As Table 71 shows, 27.6 percent of eligible teachers attended the one day training and, 72.4 percent did not. Of these 144 teachers that did not attend the training, 111 were also eligible to attend the NUA training, provided on the same day. It is unknown whether these teachers were instructed to attend the NUA training, or another professional development training offered by the district (also on the same day).

Some of the variation in teacher participation appears to reside at the school level. At the school level, the percentage of teachers receiving the full amount of NJCU professional development

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<sup>25</sup> The training during the school year was 6 hours long.

ranges from 0 to 62.5 percent. A score was created to summarize the level of participation at the school level for the large-group trainings provided by NJCU. Depending on the percentage of teachers who had full participation in the large-group trainings, each school was given an overall score of 1–4. For example, if a school had 80 percent of its teachers reach full participation, it would receive a high score of “4.” Table 72 shows how the score was calculated.<sup>26</sup>

**Table 72. Criteria for participation in NJCU group training**

Percentage of teachers with Full participation	School participation score
75–100%	4 (High)
50–74%	3 (Moderate-to-High)
25–49%	2 (Low-to-Moderate)
0–24%	1 (Low)

Table 73 presents the breakdown of participation by school.

**Table 73. Number and percentage of teachers in each school by participation category: NJCU, Year 4**

School	Total no. of teachers	% of teachers with Full participation	% of teachers with no participation	School participation score
School 1	8	62.5	37.5	Moderate-to-High
School 2	4	50	50	Moderate-to-High
School 5	11	18.2	81.8	Moderate-to-High
School 9	9	55.6	44.4	Moderate-to-High
School 3	5	40	60	Low-to-Moderate
School 4	8	25	75	Low-to-Moderate
School 6	13	46.2	53.8	Low-to-Moderate
School 7	8	37.5	62.5	Low-to-Moderate
School 8	8	37.5	62.5	Low-to-Moderate
School 10	6	33.3	66.7	Low-to-Moderate
School 12	7	28.6	71.4	Low-to-Moderate
School 13	21	33.3	66.7	Low-to-Moderate
School 14	9	33.3	66.7	Low-to-Moderate
School 18	10	40	60	Low-to-Moderate
School 11	24	12.5	87.5	Low
School 15	14	14.3	85.7	Low
School 16	5	0	100	Low
School 17	16	12.5	87.5	Low
School 19	13	0	100	Low
<b>Total/Average</b>	<b>199</b>	<b>30.5</b>	<b>69.5</b>	<b>Low-to-Moderate</b>

<sup>26</sup> Full participation was calculated differently than in previous years because of the decrease in training days offered.

In Year 4, no school had all their eligible NJCU teachers attend the one day training session. Only 4 schools (21 percent) achieved the second highest level of participating, and 10 schools (52.6 percent) achieved Low-to-Moderate participation. Five schools (26.3 percent) had the lowest level of participation, with 2 of these schools having none of their teachers attend the NJCU training session. Such low levels of participation can have serious implications for the likelihood of showing effects of the whole-school intervention. School-specific factors that might have caused such wide variation in attendance include staff transfers and communication about attendance for NJCU-led events. Additionally, with only one day of training offered during the school year, teachers may have had to choose from a variety of trainings or have been directed to attend a different training. With only one NJCU training offered in Year 4, teachers were placed in an “all or nothing” situation. Participation scores were either High or Low-to-Moderate with no Moderate-to-High option. In the past teachers could receive a higher score if they had attended some, but not all, of the training, although in Year 4 there was no middle option.

#### **4.B.1.2 NUA Large-group Training Participation, Year 4**

The first component of NUA’s professional development for content area teachers was the large-group training session on January 27, 2010.<sup>27</sup>

A total of 278 teachers were eligible to receive professional development from NUA in Year 4. These eligible teachers have been categorized by their level of participation in the NUA professional development activities. Table 74 defines the participation levels.

**Table 74. Participation categories for NUA group training in Year 4**

<b>Component</b>	<b>Full participation</b>	<b>No participation</b>
<b>January Large-group</b>	<b>1 Day</b>	<b>0 days</b>

Table 75 provides the number and percentage of teachers at each of the levels of participation outlined in Table 74.

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<sup>27</sup> The training during the school year was 6 hours.

**Table 75. Number and percentage of NUA-eligible teachers by level of participation in Year 4**

	<b>Number</b>	<b>%</b>
<b>Full participation</b>	<b>98</b>	<b>35.3</b>
<b>No participation</b>	<b>180</b>	<b>64.7</b>
<b>Total</b>	<b>278</b>	<b>100.0</b>

As Table 75 shows, 35.3 percent of NUA-eligible teachers received the professional development training, while nearly 65 percent did not. It should be noted roughly 50 percent of teachers were eligible for both NUA and NJCU training. These teachers either taught both language arts and a content area subject (usually social studies), or they taught all subjects (usually special education or bilingual teachers). Of the 180 teachers who did not attend the NUA training, 93 were also eligible to attend the NJCU training held the same day. It is not known whether these teachers were instructed to attend the NJCU training or one of the other professional development sessions being offered by the district on the same day.

Again, at least some of the variation in participation appears to reside at the school level. As shown in Table 77, across the 19 Striving Readers schools, the percentage of teachers receiving the amount of NUA professional development ranged from 0 to 62.5 percent. A score was created for the school level to summarize the extent of participation at the large-group trainings provided by NUA. Depending on the percentage of teachers who had full or moderate participation in the large-group trainings, each school was given an overall score of 1–4. For example, if a school had 80 percent of its teachers reach full and/or moderate participation, it would receive a high score of “4.” Table 76 shows how the score was calculated.

**Table 76. Criteria for participation in NUA group training**

<b>Percentage with full or moderate participation</b>	<b>School participation score</b>
<b>75–100%</b>	<b>4 (High)</b>
<b>50–74%</b>	<b>3 (Moderate-to-High)</b>
<b>25–49%</b>	<b>2 (Low-to-Moderate)</b>
<b>0–24%</b>	<b>1 (Low)</b>

Table 77 provides the breakdown of participation by school.

**Table 77. Number and percentage of teachers in each school by participation category: NUA, Year 4**

School	Total no. of teachers	% of teachers with full participation	% of teachers with no participation*	School participation score
School 3	8	50	50	Moderate-to-High
School 7	14	50	50	Moderate-to-High
School 12	10	60	40	Moderate-to-High
School 14	13	61.5	38.5	Moderate-to-High
School 15	16	62.5	37.5	Moderate-to-High
School 18	13	61.5	38.5	Moderate-to-High
School 19	15	53.3	46.7	Moderate-to-High
School 5	16	37.5	62.5	Low-to-Moderate
School 6	21	38.1	61.9	Low-to-Moderate
School 8	10	40	60	Low-to-Moderate
School 10	10	30	70	Low-to-Moderate
School 13	24	41.7	58.3	Low-to-Moderate
School 16	8	37.5	62.5	Low-to-Moderate
School 1	13	23.1	76.9	Low
School 2	8	0	100	Low
School 4	12	8.3	91.7	Low
School 9	12	8.3	91.7	Low
School 11	35	17.1	82.9	Low
School 17	20	10	90	Low
<b>Total/Average</b>	<b>278</b>	<b>36.3</b>	<b>63.7</b>	<b>Low-to-Moderate</b>

\*Low and no participation have been combined.

In Year 4, no school achieved the highest level of participation, meaning no school had all the eligible NUA teachers attend the one day of training. Seven schools (36.8 percent) achieved the second highest level of participating, earning a score of 3. Six schools (31.6 percent) achieved Low-to-Moderate participation, while another 6 (31.6 percent) had the lowest level of participation. Of these 6 schools, 1 school had no eligible teachers in the school attending the NUA training session in Year 4. Low levels of participation can have serious implications for the likelihood of showing effects of the whole-school intervention. School-specific factors that might have caused such wide variation in attendance include staff transfers and communication about attendance for NUA-led events. Additionally, with only one day of training offered during the school year, teachers may have had to choose from a variety of trainings or have been directed to attend a different training. With only one NUA training offered in Year 4, teachers were placed in an “all or nothing” situation. Participation scores were either High or Low-to-Moderate with no Moderate-to-High option. In the past teachers could receive a higher score if they had attended some, but not all, of the training, although in Year 4 there was no middle option.

## 4.B.2 In-School Coaching Implementation Results, Year 4

### 4.B.2.1 NJCU Participation

The second component of NJCU’s professional development for language arts teachers was in-school coaching visits. The plan was for NJCU coaches to visit all 19 Striving Readers schools, starting in September 2009 and ending in May 2010. Each of the 19 schools was visited by a NJCU coach 12 times.<sup>28</sup>

A score was calculated for each school based on the number of coaching visits received during Year 4. Table 78 provides the scoring criteria, while Table 79 presents the coaching score.

**Table 78. Criteria for in-school coaching visits for NJCU**

<b>% of Intended visits</b>	<b>School score</b>
75–100%	4 (High)
50–74%	3 (Moderate-to-High)
25–49%	2 (Low-to-Moderate)
0–24%	1 (Low)

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<sup>28</sup> As contracted through the Striving Readers grant, NJCU was expected to make 5 visits to Striving Readers schools in Year 4; however, Title 1 funds were used to subsidize the number of visits for a total 12 visits per school.

**Table 79. Number of coaching visits received by school and resulting coaching score: NJCU, Year 4**

<b>School</b>	<b>Number of coaching visits</b>	<b>School coaching score</b>
School 1	12	High
School 2	12	High
School 3	12	High
School 4	12	High
School 5	12	High
School 6	12	High
School 7	12	High
School 8	12	High
School 9	12	High
School 10	12	High
School 11	12	High
School 12	12	High
School 13	12	High
School 14	12	High
School 15	12	High
School 16	12	High
School 17	12	High
School 18	12	High
School 19	12	High
<b>Average</b>	<b>12</b>	<b>High</b>

As Table 79 shows, all of the schools (100 percent) in Year 4 received all of the intended coaching visits laid out by the intervention model.

It is possible that the coaching visits were able to mitigate the low participation in the group sessions. More than 35.7 percent of teachers received at least 1 hour of in-school coaching visits in Year 4. On average, teachers got an extra 6.6 hours of instruction from NJCUs’ coaching visits (see Table 80).

There was large variation in the amount of coaching hours at each school (1.87–18.10 hours). This range can be attributed to multiple factors such as different numbers of teachers at each school and the level of need of each individual teacher. Coaching was provided on an as-needed basis, so no set number of hours was required for each teacher. Some teachers may have needed more in-school coaching hours than others to feel comfortable with the techniques. Therefore, the average hours of coaching received is provided as description but does not necessarily reflect that certain schools had higher or better levels of participation (see Table 80).

Table 80. Average number of NJCU coaching hours received by school in Year 4

School	Total no. of teachers	No. of coaching visits	Avg. hours rec'd	Receipt of coaching visits: Number of teachers with following participation levels*			
				0 hrs	1-15 hrs	16-30 hrs	31+ hrs
School 1	8	12	7.77	3	5	0	0
School 2	4	12	11.75	1	2	1	0
School 3	5	12	9.01	3	1	0	1
School 4	8	12	4.63	6	0	2	0
School 5	11	12	3.32	8	2	1	0
School 6	8	12	7.63	3	3	2	0
School 7	13	12	1.87	10	3	0	0
School 8	8	12	6.39	5	1	1	1
School 9	9	12	18.10	4	1	1	3
School 10	6	12	6.89	4	0	2	0
School 11	24	12	2.53	18	5	1	0
School 12	7	12	7.33	5	1	0	1
School 13	21	12	5.38	13	4	4	0
School 14	9	12	4.90	7	0	2	0
School 15	14	12	5.09	7	6	1	0
School 16	5	12	9.40	4	0	0	1
School 17	16	12	3.62	11	3	2	0
School 18	10	12	4.75	7	3	0	0
School 19	13	12	4.16	9	2	2	0
<b>Total/Average</b>	<b>199</b>	<b>12</b>	<b>6.55</b>	<b>128</b>	<b>42</b>	<b>22</b>	<b>7</b>

\* It is impossible to determine the expected number of hours per school visit, because the visits were tailored to the specific needs of each school and the type of training provided (such as group sessions or individual demonstration lessons) and sometimes depended on the level of substitute coverage obtained. In addition, NPS did not require or specify the number of visits needed during the school year.

#### 4.B.2.2 NUA Participation

The second component of the whole-school intervention is the in-school visits provided by the NUA mentors. The plan was for NUA to visit all 19 Striving Readers schools in the 4th year of the grant, starting in September 2009 and ending in June 2010. Each school was to be visited by a NUA mentor for 15 days. Each school received an average of 14.1 visits. The number per school ranged from 13 to 15 visits. A score was calculated for each school based on the number of coaching visits received during Year 4. Table 81 provides the scoring criteria, while Table 82 presents the coaching score.

**Table 81. Criteria for in-school coaching visits for NUA**

<b>% of Intended visits</b>	<b>School score</b>
75–100%	4 (High)
50–74%	3 (Moderate-to-High)
25–49%	2 (Low-to-Moderate)
0–24%	1 (Low)

**Table 82. Number of coaching visits received by school and resulting coaching score: NUA, Year 4**

<b>School</b>	<b>Number of coaching visits</b>	<b>School coaching score</b>
School 1	14	High
School 2	14	High
School 3	14	High
School 4	14	High
School 5	14	High
School 6	13	High
School 7	15	High
School 8	14	High
School 9	15	High
School 10	14	High
School 11	15	High
School 12	13	High
School 13	14	High
School 14	14	High
School 15	14	High
School 16	14	High
School 17	15	High
School 18	14	High
School 19	15	High
<b>Average</b>	<b>14.12</b>	<b>High</b>

All 19 schools received all or nearly all of the coaching visits intended by the intervention. It is possible that the coaching visits were able to mitigate the low participation in the group sessions. Nearly 70 percent of NUA teachers received at least 1 hour of in-school coaching in Year 4 and 16.1 percent of teachers received 16 hours or more of in-school coaching. Table 83 shows that, on average, teachers got an extra 9.4 hours of instruction from NUA coaching visits. Similar to NJCU, the number of hours individual teachers received was based on individual need. Teachers who received fewer hours of in-school coaching may not have required as intensive coaching as others, thus causing the wide variation in individual hours of coaching received.

Table 83. Average number of NUA coaching hours received by school in Year 4

School	Total no. of teachers	No. of coaching visits	Avg. hours rec'd	Receipt of coaching visits: Number of teachers with following participation levels*			
				0 hrs	1-15 hrs	16-30 hrs	31+ hrs
School 1	13	14	4.76	5	7	1	0
School 2	8	14	9.75	1	5	2	0
School 3	8	14	11.75	2	2	4	0
School 4	12	14	6.80	4	7	1	0
School 5	16	14	13.42	4	5	6	1
School 6	14	13	7.19	5	12	2	0
School 7	21	15	9.62	0	15	1	0
School 8	10	14	14.25	3	2	5	0
School 9	12	15	8.92	9	1	0	2
School 10	10	14	15.08	2	3	5	0
School 11	35	15	2.12	21	14	0	0
School 12	10	13	22.34	1	3	2	4
School 13	24	14	3.83	7	16	1	0
School 14	13	14	9.44	4	6	3	0
School 15	16	14	11.53	2	13	1	0
School 16	8	14	8.17	2	5	1	0
School 17	20	15	2.50	7	13	0	0
School 18	13	14	12.03	1	11	1	0
School 19	15	15	5.42	5	8	2	0
<b>Total/Average</b>	<b>278</b>	<b>14.12</b>	<b>9.42</b>	<b>85</b>	<b>148</b>	<b>38</b>	<b>7</b>

\* It is impossible to determine the expected number of hours per school visit, because the visits were tailored to the specific needs of each school and the type of training provided (such as group sessions or individual demonstration lessons) and sometimes depended on the level of substitute coverage obtained. In addition, NPS did not require or specify the number of visits needed during the school year.

#### 4.B.2.3 RTC In-School Coaching Participation

In addition to the in-school support from developers, language arts teachers also received in-school coaching support from the Striving Readers RTCs. This support was provided on an as-needed basis. Between September 2009, and June 2010, the RTCs visited all 19 schools. Each Striving Readers school was visited by an RTC an average of 18 days, ranging from 4 to 28 visits (see Table 84).

**Table 84. Number of RTC coaching visits received by school in Year 4**

<b>School</b>	<b>Number of RTC coaching visits</b>
School 1	23
School 2	16
School 3	31
School 4	31
School 5	16
School 6	16
School 7	12
School 8	17
School 9	15
School 10	27
School 11	14
School 12	17
School 13	20
School 14	20
School 15	14
School 16	18
School 17	28
School 18	4
School 19	14
<b>Average</b>	<b>18.6</b>

During these visits, RTCs worked with teachers on various whole-school activities, such as offering classroom support, coaching, modeling, offering assistance with student work, and using student data to inform instruction.<sup>29</sup> In addition, they assisted in preparing for the NJASK, the GEPA initiative, and standards-based lessons. Often RTCs worked on multiple activities during one visit.

### **4.B.3 Whole School Intervention - Participation Summary, Year 4**

A summary scale for Year 4 was developed to describe the professional development components across the four years of the project. An overall implementation score and level of implementation were calculated for each school in the study. Table 85 lists the definitions for the school-level implementation, which are based on the implementation scores for group sessions and coaching visits for NJCU. Table 86 provides each school’s score for the multiple facets of the professional

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<sup>29</sup> RTCs are required to complete an “RTC Log” each time they visit a school. However, in Year 1, the log did not allow the research team to differentiate between visits to support the whole-school intervention and visits to support the targeted intervention. This was corrected in Year 2 and was used in Year 3 and 4. The form is provided in Appendix E.

development for the whole-school intervention—the group training sessions and the in-school coaching visits—in the NUA and the NJCU intervention models.

**Table 85. Criteria for teacher participation in whole-school professional development activities**

Average implementation score	Overall implementation level
4.0	High
3.0–3.9	Moderate-to-High
2.0–2.9	Moderate
0–1.9	Low

**Table 86. School-level summary scores for participation in whole-school professional development activities in Year 4**

School	Implementation scores by component				Average score	Summary implementation scores
	NUA		NJCU			
	Large-group training	In-school coaching	Large-group training	In-school coaching		
School 1	1	4	3	4	3	Moderate-to-High
School 2	1	4	3	4	3	Moderate-to-High
School 3	3	4	2	4	3.25	Moderate-to-High
School 5	2	4	3	4	3.25	Moderate-to-High
School 6	2	4	2	4	3	Moderate-to-High
School 7	3	4	2	4	3.25	Moderate-to-High
School 8	2	4	2	4	3	Moderate-to-High
School 9	1	4	3	4	3	Moderate-to-High
School 10	2	4	2	4	3	Moderate-to-High
School 12	3	4	2	4	3.25	Moderate-to-High
School 13	2	4	2	4	3	Moderate-to-High
School 14	3	4	2	4	3.25	Moderate-to-High
School 15	3	4	1	4	3	Moderate-to-High
School 18	3	4	2	4	3.25	Moderate-to-High
School 19	3	4	1	4	3	Moderate-to-High
School 4	1	4	2	4	2.75	Moderate
School 11	1	4	1	4	2.5	Moderate
School 16	2	4	1	4	2.75	Moderate
School 17	1	4	1	4	2.5	Moderate
<b>Average</b>	<b>2.05</b>	<b>4.00</b>	<b>1.95</b>	<b>4.00</b>	<b>3</b>	<b>Moderate-to-High</b>

As Table 86 shows, no school achieved full implementation of all four components. However, 15 schools had Moderate-to-High levels of implementation for the whole-school intervention. The remaining four schools all had moderate levels of implementation, taking into account all components of the whole-school professional development.

It should be noted that the relatively high average levels of participation are related more to the high levels of whole-school coaching than to high levels of teacher participation in the group training session. Even where teacher participation in the group training was poor, the developers (NUA and NJCU) compensated through multiple in-school visits.

## **4.C Barriers to Whole-School Implementation, Year 4**

The most significant difference between the whole-school intervention “as planned” and “as implemented” was the low level of participation of teachers in both NJCU and NUA large-group trainings. The many teachers who received very no large-group training posed a serious problem for implementation of the whole-school intervention. Whole-school intervention effects may not have been found because of low participation rates of teachers rather than the ineffectiveness of the intervention itself.

Based from feedback from district administrators, several additional barriers to participation in Year 4 emerged. District administrators noted that with increased teaching days added to the school calendar, there was a reduction in professional development days allotted in the district. With fewer professional development days, teachers did not have the same opportunity as in previous years to attend trainings.

There were also scheduling conflicts which posed obstacles for teachers. NPS sets aside days for district-wide professional development during the school year, and all training (not just for the Striving Readers grant) occurs on these days. Therefore, NPS must decide whether the teacher should attend the Striving Readers professional development sessions, the other sessions also scheduled, or remain in the school for departmental meetings. Moreover, a number of teachers are eligible to attend both the NUA and the NJCU sessions. Therefore, these dual eligible teachers must choose one curriculum partner over the other. In previous years these dual eligible teachers may have been able to attend one day of NUA training and on another professional development day attend a NJCU training, however, with only one training day held (and NUA and NJCU held on the same days) teachers had to make a choice between them.

It was hoped that in Year 4 these trainings could be held on non-conflicting days. Unfortunately, it was not logistically possible. NPS has only a certain number of professional development days allotted, and multiple initiatives take place throughout the district that require large-group trainings.

In addition to low participation by the teachers in the professional development sessions, teacher turnover from Year 3 to Year 4 also was high (see Table 87). Despite direction from NPS asking principals not to reassign Striving Readers teachers, teacher turnover was 23 percent. Table 87 describes teacher turnover from Year 3 to Year 4.

**Table 87. Teacher turnover from Year 3 to Year 4**

<b>Year 3 teacher</b>	<b>Year 4 teacher</b>	<b>Number of teachers</b>	<b>%</b>
Yes	Yes	260	77.2%
Yes	No	77	22.8%
No	Yes	77	-

Table 88 describes how many teachers have taught in Striving Readers classrooms for 1 or more years of the grant. Almost a quarter of teachers (149 teachers) have remained in the project over the first four years, while 36.6 percent of teachers (220 teachers) have only remained in Striving Readers classrooms for one out of the four years. However, it is encouraging that over 40 percent of teachers have remained for at least 3 of the four years of the grant. Teachers have shown a range of movement in and out of Striving Readers classrooms, with some beginning the grant in Year 1, leaving, and subsequently returning to a Striving Readers classroom at various time points. This movement of teachers in and out over the four years of the grant may contribute to a lack of findings for the whole-school intervention.

**Table 88. Number of teachers by years taught in Striving Readers Classroom**

<b>How many years taught in a Striving Readers Classroom</b>	<b>Number of teachers</b>	<b>% of total Striving Readers Teachers from all 4 Years</b>
All 4 Years	149	24.8%
3 Years	94	15.6%
2 Years	138	23.0%
1 Year	220	36.6%
<b>Total</b>	<b>601</b>	

The issue of principal turnover, was a particular challenge in Year 2, but was somewhat resolved in Years 3 and 4. Principal turnover from Year 2 to Year 3 was 15.8 percent, while turnover from Year 3 to Year 4 was 21.1 percent with 4 new principals taking over in Year 4 (see Table 89). However, only 6 principals have remained consistent from Year 1 through Year 4. Still, an additional 7 principals have been at their respective school from Year 2 through Year 4 of the grant, offering some consistency in 13 of the 19 Striving Readers schools in the 3 most recent years of the grant. Principal turnover could have consequences for implementation. For example, if new principals are

not familiar with or buy into the whole-school intervention, support of teacher participation in trainings could be hindered.

**Table 89. Principal turnover from Year 3 to Year 4**

<b>Year 3 principal</b>	<b>Year 4 principal</b>	<b>Number of principals</b>	<b>%</b>
Yes	Yes	15	78.9%
Yes	No	4	21.1%

Another challenge in Year 4 was a reduction in RTCs available to support Striving Readers. Two of the five RTCs remained the same from the previous years, however there were changes in the remaining three RTCs. One of the RTCs was on maternity leave during Year 4 and another was on extended medical leave. The third RTC was new to the project. This decrease in RTCs may have been the reason for the decrease in RTC visits in the school from Year 3 (average of 28 visits per school) to Year 4 (average of 18 visits per school).

Some serious challenges remain in regard to implementation of the whole-school intervention. Despite these challenges, no changes were made between Year 3 and Year 4 to increase participation in large-group training. Conflicting initiatives in the District and a decrease in teacher professional development days, in addition to teacher and principal turnover made increasing participation difficult. Sign in sheets and the In School Professional Development Form (Appendix D) continued to be implemented in Year 4. These assisted in recording teachers’ participation in training.

## **4.D Years 1–4 Implementation Summary**

### **4.D.1 Whole-School Training Participation, Years 1–4 Summary**

The whole-school intervention consisted of both large-group professional development and in-school coaching visits. The degree of implementation in Years 1 through 4 was determined by examining the extent of teacher participation in the large-group training activities provided by NUA and NJCU. Schools were given a participation score based on the percentage of eligible teachers who attended the relevant large-group training sessions. The scores ranged from 1 to 4. For example, in the NUA column, a school was given a score of “4” if more than three-quarters of all eligible content area teachers attended the NUA large-group professional development sessions. Similarly, a score of “1” was assigned to a school where less than a quarter of teachers attended. An average score then was computed for each school based on the attendance at NUA and NJCU large-

group sessions. Based on the average of participation scores, each school was assigned a participation rating level: Low, Low-to-Moderate, Moderate-to-High, or High (see Table 90). Table 91 provides a comparison of large-group participation scores in Years 1 through 4. It is important to note that in Year 4, there were considerably fewer training opportunities for teachers. No summer institutes were held and only one day of large-group training was held during the school year. In previous years, teachers had the opportunity to attend a 3-4 day summer institute and 2-3 days of large-group trainings during the school year.

**Table 90. Criteria for participation in large-group professional development activities**

<b>Average score</b>	<b>School participation rating</b>
<b>3.1-4</b>	<b>High</b>
<b>2.1-3</b>	<b>Moderate-to-High</b>
<b>1.1-2</b>	<b>Low-to-Moderate</b>
<b>0-1</b>	<b>Low</b>

Table 91. Year 1, 2, 3, and 4 ratings by school on teacher participation in large-group professional development activities

School	Year 1			Year 2			Year 3			Year 4			Change from Year 3 to Year 4	Change from Year 1 to Year 4
	NUA (1-4)	NJCU (1-4)	Avg. Score (1-4)	NUA (1-4)	NJCU (1-4)	Avg. Score (1-4)	NUA (1-4)	NJCU (1-4)	Avg. Score (1-4)	NUA (1-4)	NJCU (1-4)	Avg. Score (1-4)		
School 1	3	1	1.5	4	2	3	3	2	2.5	1	3	2	-0.5	0.5
School 2	1	1	1	3	1	2	2	3	2.5	1	3	2	-0.5	1
School 3	3	3	3	1	1	1	2	2	2	3	2	2.5	0.5	-0.5
School 4	2	2	2	3	1	2	2	2	2	1	2	1.5	-0.5	-0.5
School 5	3	1	1.5	3	1	2	4	4	4	2	3	2.5	-1.5	1
School 6	2	3	2.5	2	1	1.5	3	3	3	2	2	2	-1	-0.5
School 7	2	2	2	2	1	1.5	1	2	1.5	3	2	2.5	1	0.5
School 8	2	3	2.5	3	1	2	3	2	2.5	2	2	2	-0.5	-0.5
School 9	1	3	1.5	2	2	2	2	3	2.5	1	3	2	-0.5	0.5
School 10	2	3	2.5	2	1	1.5	2	1	1.5	2	2	2	0.5	-0.5
School 11	2	3	2.5	2	1	1.5	2	3	2.5	1	1	1	-1.5	-1.5
School 12	3	3	3	2	2	2	2	2	2	3	2	2.5	0.5	-0.5
School 13	1	2	1.5	1	1	1	3	1	2	2	2	2	0	0.5
School 14	2	2	2	3	2	2.5	3	2	2.5	3	2	2.5	0	0.5
School 15	2	2	2	1	2	1.5	3	3	3	3	1	2	-1	0
School 16	3	2	2.5	4	1	2.5	3	1	2	2	1	1.5	-0.5	-1
School 17	2	1	1.5	1	1	1	2	3	2.5	1	1	1	-1.5	-0.5
School 18	3	3	3	3	1	2	1	1	1	3	2	2.5	1.5	-0.5
School 19	1	1	1	1	1	1	1	1	1	3	1	2	1	1
<b>Average</b>	<b>2.11</b>	<b>2.16</b>	<b>2.05</b>	<b>2.26</b>	<b>1.26</b>	<b>1.76</b>	<b>2.32</b>	<b>2.16</b>	<b>2.24</b>	<b>2.05</b>	<b>1.95</b>	<b>2.00</b>	<b>-0.24</b>	<b>-0.05</b>

Over the four years of the project, overall large-group training scores ranged from the Low-to-Moderate category (Years 2 and 4) to Moderate-to-High (Years 1 and 3). Overall scores decreased from Year 3 to Year 4 by .24 points, however, the overall decrease from Year 1 to Year 4 was relatively small (.05 points) as can be seen in Figure 6. As discussed previously in section 4.C., there have been many barriers that have kept teachers from participating in the large-group trainings. It appeared in Year 3 that participation was at its best, but in Year 4 with the reduction in teacher training days and other initiatives offering training in the district on the same day, this may be a reason for the decrease from the High in Year 3 to Year 4.

**Figure 6. Average School level Ratings for Whole-Group Participation, Years 1-4**

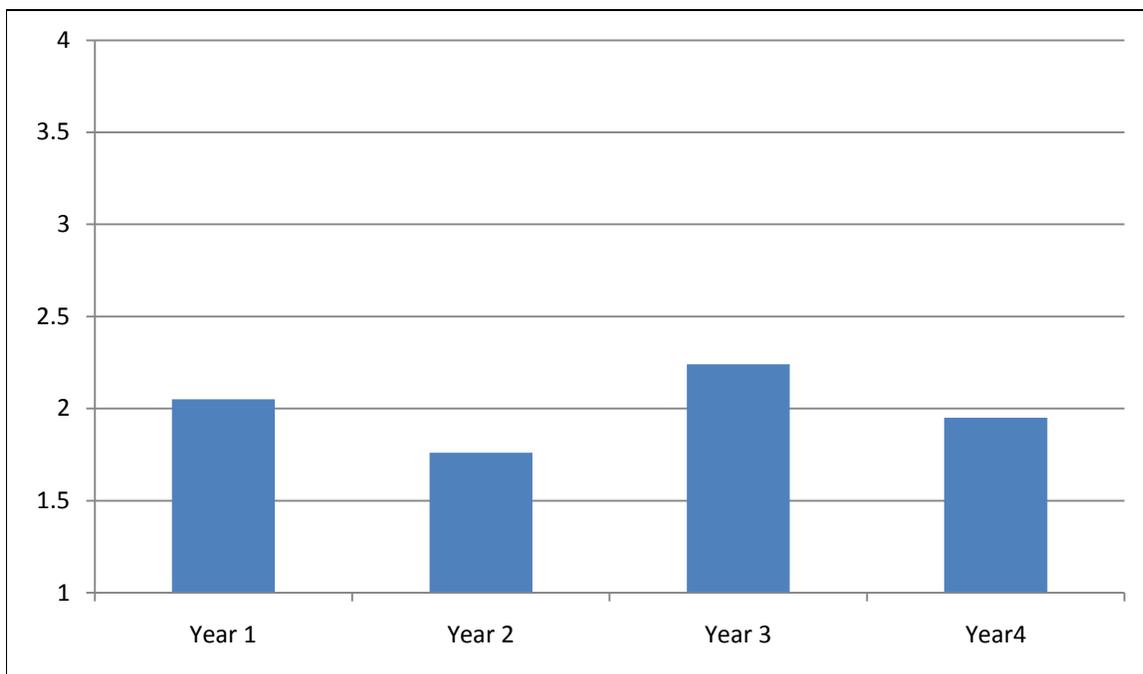


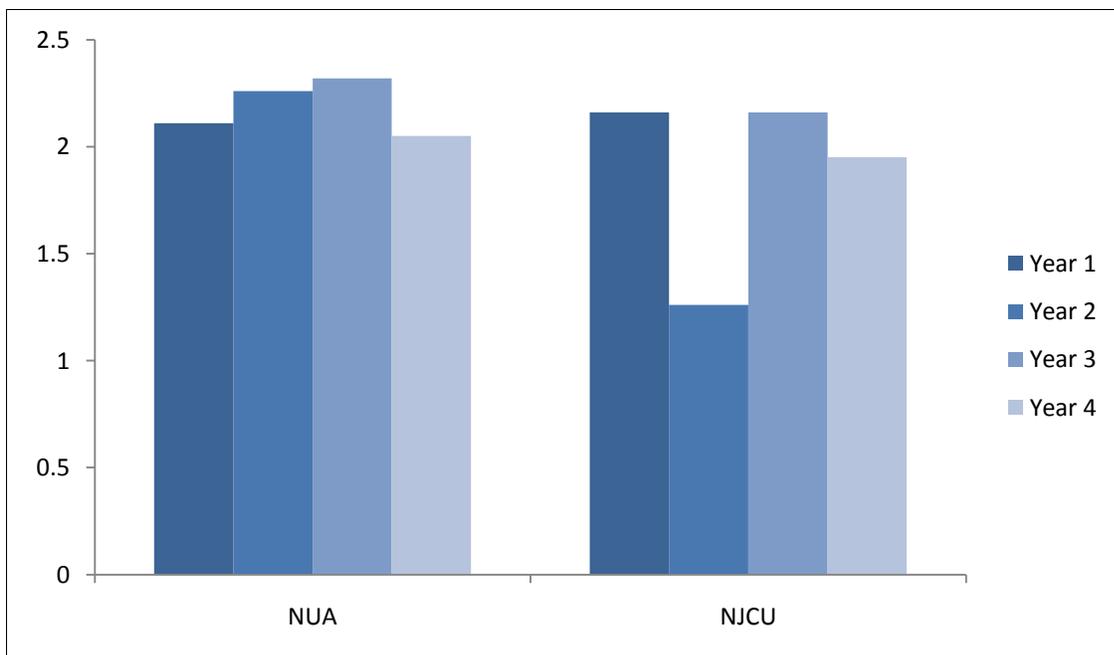
Table 92 shows the number and percentage of schools who achieved each of the four participation categories over the four years of the project. Year 3 had the highest number of schools in the Moderate-to-High category and one school even achieved the High rating. However in Year 4 the percentage of schools who achieved Moderate-to-High ratings decreased. The number of schools receiving a Low rating remained small (2 schools) in Year 4.

**Table 92. Summary of Years 1 through 4 school participation in large-group professional development activities by average rating**

	Year 1		Year 2		Year 3		Year 4	
	Number of schools	Percentage of schools						
Low	2	11%	4	21%	2	11%	2	11%
Low to moderate	9	47%	12	63%	7	37%	11	58%
Moderate-to-High	8	42%	3	15%	9	47%	6	32%
High	0	0%	0	0%	1	5%	0	0%

Overall, NUA large-group participation scores increased over the first 3 years of the grant but decreased in Year 4 (see Figure 7). In Year 1, the average score was 2.11, but it increased to 2.26 in Year 2 and 2.32 in Year 3. In Year 4 the score decreased to 2.05 but this did not lead to a change in the participation category (all 4 scores are in the Moderate-to-High range). A similar trend was not found for NJCU participation in large-group training as training participation varied over the four years of the grant. In Years 1 and 3 participation ratings were in the Moderate-to-High category, however, in Years 2 and 4 participation was in the Low-to-Moderate category. Again, the reduction in available teacher training days in Year 4 and other District wide initiatives offering training on the same day may have led to the decrease in participation in the large-group trainings. .

**Figure 7. Changes in participation among Years 1, 2, 3, and 4**



#### 4.D.2 In-School Coaching Participation, Years 1–4 Summary

The level of teacher support provided by the curriculum developers is calculated by examining the number of in-school visits made by NUA and NJCU. Based on the average of in-school participation scores, each school was assigned a participation rating level: Low, Low-to-Moderate, Moderate-to-High, or High (see Table 93). Table 94 provides each school with a score for these in-school visits. Each school’s score is based on the number of visits received compared to the number that was anticipated. For example, in the NUA column, a school is given a score of “4” if it received at least three-quarters of the designated coaching visits. An average score then is computed for each school based on the NUA and NJCU components.

**Table 93. Criteria for in-school coaching participation**

<b>Average score</b>	<b>School participation rating</b>
3.1–4	High
2.1–3	Moderate-to-High
1.1–2	Low-to-Moderate
0–1	Low

Table 94. Years 1 through 4 ratings by school on receipt of in-school teacher support

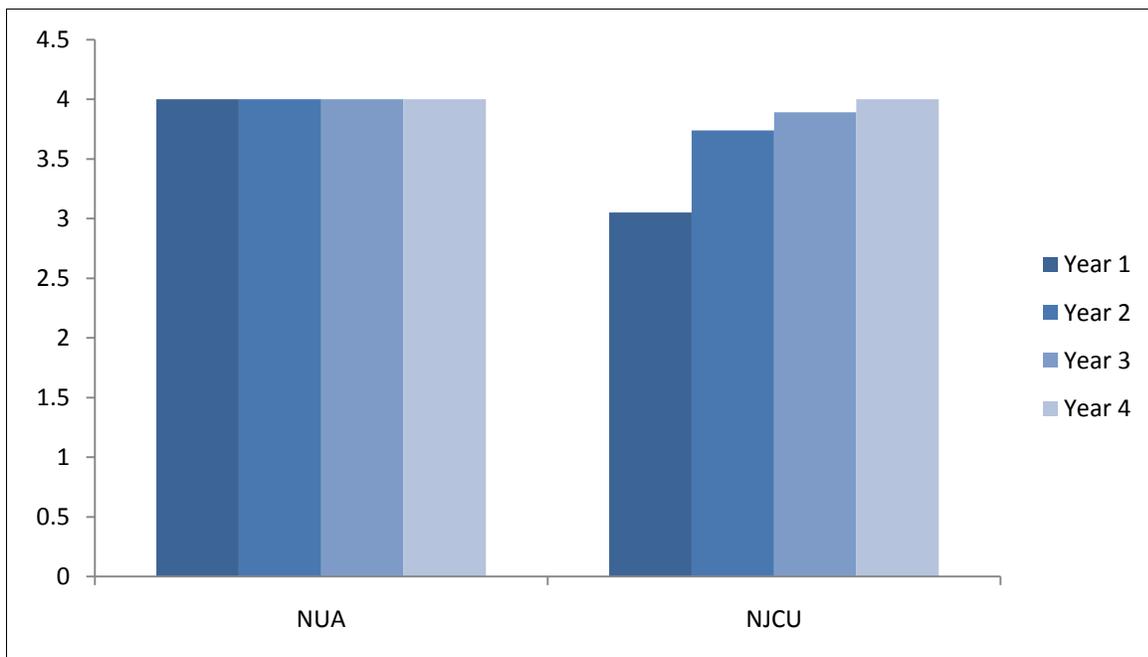
School	Year 1			Year 2			Year 3			Year 4			Change from Year 3 to Year 4	Change from Year 1 to Year 4
	NUA	NJCU	Avg. Score											
School 1	4	4	4.0	4	4	4	4	4	4	4	4	4	0	0
School 2	4	4	4.0	4	4	4	4	4	4	4	4	4	0	0
School 3	4	4	4.0	4	4	4	4	4	4	4	4	4	0	0
School 4	4	4	4.0	4	4	4	4	4	4	4	4	4	0	0
School 5	4	4	4.0	4	4	4	4	4	4	4	4	4	0	0
School 6	4	4	4.0	4	4	4	4	4	4	4	4	4	0	0
School 7	4	4	4.0	4	4	4	4	4	4	4	4	4	0	0
School 8	4	2	3.0	4	4	4	4	4	4	4	4	4	0	1
School 9	4	4	4.0	4	4	4	4	3	3.5	4	4	4	0.5	0
School 10	4	3	3.5	4	4	4	4	4	4	4	4	4	0	0.5
School 11	4	4	4.0	4	4	4	4	3	3.5	4	4	4	0.5	0
School 12	4	2	3.0	4	4	4	4	4	4	4	4	4	0	1
School 13	4	1	2.5	4	4	4	4	4	4	4	4	4	0	1.5
School 14	4	1	2.5	4	4	4	4	4	4	4	4	4	0	1.5
School 15	4	4	4.0	4	4	4	4	4	4	4	4	4	0	0
School 16	4	3	3.5	4	4	4	4	4	4	4	4	4	0	0.5
School 17	4	4	4.0	4	4	4	4	4	4	4	4	4	0	0
School 18	4	1	2.5	4	1	2.5	4	4	4	4	4	4	0	1.5
School 19	4	1	2.5	4	2	3	4	4	4	4	4	4	0	1.5
<b>Average</b>	<b>4.00</b>	<b>3.05</b>	<b>3.53</b>	<b>4.00</b>	<b>3.74</b>	<b>3.87</b>	<b>4.00</b>	<b>3.89</b>	<b>3.95</b>	<b>4.00</b>	<b>4.00</b>	<b>4.00</b>	<b>0.05</b>	<b>0.47</b>

Over the four years of the project, the overall in-school coaching score increased. In Year 1 the score overall score was 3.53 and by Year 4 the average score was 4.0, the highest score available. From Year 3 to Year 4, a slight increase of .05 occurred in the in-school coaching scores. Seventeen schools remained the same (again mainly because participation was already as high as possible) while two other schools showed increases in in-school coaching receipt. No schools decreased in in-school coaching scores from Year 3 to Year 4.

In changes between Year 1 and Year 4, in-school coaching receipts increased overall by .47. Eleven schools remained the same (already at the highest level of implementation). Eight other schools increased their scores between Years 1 and 4.

In-school coaching scores have been consistently high in all four years. In particular, NUA scores have been at the highest level since the start. NJCU scores were in the High range during the first year, but have steadily improved over the four years. In Year 4 NJCU the average NJCU score was a 4, the highest score attainable. Figure 8 shows the increase in scores for NUA and NJCU over the four years of the project.

**Figure 8. Changes in in-school support among Years 1, 2, and 3**



# Effect of Whole-School Intervention

# 5

## 5.A Introduction

The goal of NPS whole-school intervention is to improve students' ability to "read to learn" across multiple content areas. The whole-school intervention is designed to train teachers to better integrate different learning strategies within the district's core literacy program for middle-grade students. To this end, the intervention provides professional development to bolster the literacy knowledge of teachers of grades 6, 7, and 8 in whole-group settings and to provide direct coaching support using in-school visits. These professional development and support activities are conducted by experts from New Jersey City University (NJCU) and the National Urban Alliance (NUA). In this chapter we describe the evaluation conducted to examine the impact of whole-school intervention on students' literacy achievement.

## 5.B Research Design

### 5.B.1 Treatment and Comparison Group

Because teachers in all 19 Striving Readers schools received the whole-school intervention, a randomized experimental design for this evaluation was not possible. Therefore, a quasi-experimental research design was adopted, with 19 other middle schools in the district serving as a comparison group. State test scores from students in grades 6-8 with were aggregated to the school level for the analyses. Treatment and comparison schools then were compared using a modified short interrupted time series model. This relatively new analytic approach to study whole-school reforms evaluates a program model when only a few years of data are available (Bloom, 2003).

### 5.B.2 Measures

The key measure in the whole-school intervention is the state's standardized exam, the New Jersey Assessment of Skills and Knowledge (NJASK). The Language Arts Literacy (LAL) section of the exam is composed of both literacy/reading and writing sections. The analyses of student NJASK

scores focus on the connection between the implementation of the professional development intervention and student literacy achievement. To evaluate this relationship, the results of the NJASK LAL test were used as the measure of student learning. In the 2005–06, 2006-07, 2007-08 and 2008-09 school years, students took the NJASK near the end of the year, typically in late April and early May. The short interrupted time series model is premised on comparing the performance of schools before and after the intervention was put in place. In this case, the NJASK scores from 2005–06 provide the preprogram performance data. The next 3 years then provide the post-program implementation performance data, which allows a comparison to see if any changes took place after the whole-school intervention was started.

In addition to achievement scores, school demographic data at baseline were also downloaded from the New Jersey State Department of Education (NJSDE) website. Data were collected on basic school level demographic characteristics: gender (percent male), ethnicity/race (percent African American and percent Hispanic), and special education (percent of students with an IEP).

### **5.B.3 Analysis Model Specifications**

The fact that all teachers in the 19 Striving Readers schools received the whole-school treatment presented substantial challenges for this study. When the treatment and comparison groups are not randomly assigned for the intervention, serious threats can be introduced to the internal validity of the evaluation design. In addition, the NJASK test was changed during the 2006-07 school year, making LAL scores incomparable over time. A lack of student-level data for the comparison schools also reduced the number of available modeling alternatives.

To deal with these issues, a mixed model regression approach, based on the interrupted time series (ITS) concept, was designed for the NJASK evaluation. The primary goal of this model is to leverage the availability of multiple years of data to factor out some of the validity issues raised by the lack of randomization. The model does this by comparing grade cohorts of treatment and comparison groups over time focusing specifically on the year-to-year gains in scale score averages. It is essentially a difference-in-difference model, because it focuses on the difference between treatment and comparison groups at different points in time. We include all of the middle schools in the district as a comparison group for two reasons. First, by including a larger number of schools in the analysis, the power of the models to detect significant differences is increased. Second, we assume that the homogeneity of the district makes all of the middle schools relatively similar, such

that any external factors that affected test scores, other than the whole-school intervention, can be effectively controlled for by the difference-in-difference model approach.

The mixed model approach also allows the inclusion of covariates for observable differences in the demographic composition of schools as well as a random intercept to vary across the groups.

Perhaps most importantly, it also takes into account the alteration of the NJASK exam by looking separately at the score changes from baseline to Year 1, from Year 1 to Year 2 and from year 2 to year 3. Whatever effect the changes to the test had on test scores is assumed to have affected all schools equally. The equation is specified as follows:

$$Y_{ij} = \beta_0 + \beta_1(Trt_j) + \beta_2(Yr1_{ij}) + \beta_3(Trt_j * Yr1_{ij}) + \beta_4(Yr2_{ij}) + \beta_5(Trt_j * Yr2_{ij}) + \beta_6(Yr3_{ij}) + \beta_7(Trt_j * Yr3_{ij}) + \sum_{m=1}^M \beta_{8+m}(Z_{mj}) + \mu_{0j} + \varepsilon_{ij}$$

- $Y_{ij}$  is the school-man LAL score at time point  $i$  ( $i=0,1,2,3$ ) of the  $j^{\text{th}}$  school ( $j=1,\dots,45$ )
- $Trt_j$  = 1 if treatment school, = 0 if comparison
- $Y_{r1ij}$  = 1 if measurement from Year 1, = 0 else
- $Y_{r2ij}$  = 1 if measurement from Year 2, = 0 else
- $Y_{r3ij}$  = 1 if measurement from Year 3, = 0 else
- $Z_{mj}$  is the  $m^{\text{th}}$  ( $m=1,\dots,M$ ) school level covariate measured at baseline (including whether a school received the READ180 targeted treatment)
- $\mu_{0j}$  is a random intercept term for the  $j^{\text{th}}$  school assumed distributed  $N(0, \tau^2)$
- $\varepsilon_{ij}$  is the residual error of the  $i^{\text{th}}$  measurement from the conditional mean of the  $j^{\text{th}}$  school assumed distributed  $N(0, \tau^2)$
- $\beta_1$  is the estimate of the mean difference between treatment and comparison schools at baseline
- $\beta_2$  is the estimate of the mean difference between baseline and Year 1 for comparison schools
- $\beta_3$  is the estimate of the mean difference between treatment and comparison schools in Baseline to Year 1 growth (i.e., treatment effect of one year of treatment)
- $\beta_4$  is the estimate of the mean difference between baseline and Year 2 for comparison schools
- $\beta_5$  is the estimate of the mean difference between treatment and comparison schools in Baseline to Year 2 growth (i.e., treatment effect of two years of treatment)
- $\beta_6$  is the estimate of the mean difference between baseline and Year 3 for comparison schools
- $\beta_7$  is the estimate of the mean difference between treatment and comparison schools in Baseline to Year 3 growth (i.e., treatment effect of three years of treatment)

A statistically significant result for  $\beta_3$  would indicate that the whole-school intervention treatment schools had greater gains on the NJASK LAL test between baseline and Year 1 than the comparison group schools, while a statistically significant result for  $\beta_5$  and  $\beta_7$  would indicate that the whole-school intervention treatment schools had greater gains on the NJASK LAL test between baseline and Year 2, and between baseline and year 3 than the comparison group schools respectively.

## 5.C Data Analysis and Results

### 5.C.1 Baseline Equivalence Between the Treatment and Control Groups

Baseline descriptive statistics have been analyzed to determine whether significant difference existed between the treatment and the control groups before the whole-school intervention. Tables 95 and 96 show that although there are some differences between treatment and comparison schools at baseline, none of these differences are statistically significant. Therefore, based on our T-test results, the whole-school treatment group and the comparison group were equivalent at baseline.

**Table 95. Baseline equivalence - NJASK LAL test scores**

	Treatment Schools		Comparison Schools		T Value (Pr >  t )
	Average Score	Number of schools	Average Score	Number of schools	
NJASK LAL	202.3	16*	207.2	13**	1.76 (0.10)

\*School-level NJASK LAL data were missing for 3 of the schools in the treatment group

\*\* School-level NJASK LAL data were missing for 6 of the schools in the control group

**Table 96. Baseline equivalence - demographic variables**

Demographic Variables	Treatment Schools		Comparison Schools		T Value (Pr <  t )
Black	N=19	65%	N=19	60%	-0.45 (0.65)
Hispanic	N=19	32%	N=19	25.3%	-0.72 (0.65)
Male	N=19	45.2%	N=19	47.9%	1.06 (0.290)
Special Ed	N=19	10.7%	N=19	8%	-1.2 (0.23)

### 5.C.2 Whole-School Treatment Effect on Students

Table 97 provides descriptive statistics for the NJASK LAL analyses of the whole-school impact evaluation. As noted previously, the analyses were conducted at the school level, meaning that the statistics presented are school averages for each variable.

**Table 97.<sup>30</sup> NJASK LAL Scores for the Treatment and Comparison Schools (Years 1-3)**

Year	Treatment Schools		Comparison Schools		T Value (Pr >  t )
	Average Score	Number of schools	Average Score	Number of schools	
2005-2006 (Baseline)	202.3	16	207.2	13	1.76 (0.10)
2006-2007 (Year 1)	187.3	19	192.9	19	1.28 (0.21)
2007-2008 (Year 2)	187.2	19	192.9	16	1.47 (0.15)
2008-2009 (Year 3)	199.2	19	201.3	18	0.70 (0.49)

Results of the NJASK LAL analyses revealed no statistically significant effects of the whole-school intervention on student achievement on the NJASK in Year 1, Year 2, or Year 3 of the intervention (see Table 98). Due to the changes made to the NJASK, both treatment and comparison groups experienced a substantial drop in their test scores at the end of Year 1. In Year 3, both groups scored higher on the NJASK tests than they did in Year 1 and Year 2 of the study. Although the myriad limitations discussed earlier indicated the difficulty of finding an appropriate comparison group, the fact that no baseline difference existed between the two groups does bolster confidence in the models to a small degree. Full regression results are available in Appendix E.

**Table 98. NJASK Regression Analysis Results**

Effect	Estimate	Pr <  t
Baseline differences between groups	0.56	0.916
Treatment Effect in Year 1	-3.4	0.27
Treatment Effect in Year 2	-3.6	0.25
Treatment Effect in Year 3	-1.8	0.56

## 5.D Discussion and Conclusion

Results from the analysis of whole-school intervention indicate no difference between the treatment and comparison groups on the state’s Language Arts Literacy exam at the end of Year 1, Year 2 and Year 3 of the grant. With increased teaching days added to the school calendar, there was a reduction in professional development days allotted in the district. With fewer professional development days, teachers did not have the same opportunity as in previous years to attend trainings. The low level of participation of teachers in both NJCU and NUA large-group trainings described in the previous chapter could potentially explain the lack of program impact. Whole-school intervention effects may not have been found because of low participation rates of teachers

<sup>30</sup> Since the data was downloaded from the New Jersey State Department of Education website, in the baseline year, 3 schools in the treatment group and 6 schools in the comparison group did not have school level NJASK scores. In year 2, three schools in the comparison group had missing NJASK data and in year 3, one school in the comparison group did not have NJASK test score.

rather than the ineffectiveness of the intervention itself. High teacher turnover could also have affected the implementation of the literacy strategies that were the cornerstone of the whole-school intervention. Twenty percent of the teachers who participated in whole-school intervention left their school and did not continue with the program in Year 2 and Year 3. Since changing test scores rests on first changing the practices and behaviors of many teachers and administrators, future intervention programs should put strong emphasis on continued long term support for teacher professional development to ensure program participation and implementation fidelity.

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## **Appendix A**

### **READ 180 Pacing Guide**



# READ 180 MASTER LAYOUT

6 <sup>th</sup> Grade [Year 1]	7 <sup>th</sup> Grade [Year 2]	8 <sup>th</sup> Grade [Year 3]
<b>rBook</b> Workshop 1 The New Americans Skill: Main Idea & Detail Writing Focus: Expository Writing	<b>rBook</b> Workshop 7 Alien Invaders Skill: Cause and Effect Writing Focus: Persuasive Writing	<b>rBook Flex</b> Workshop 4 Crime Lab Science Skill: Summarize Writing Focus: Expository Summary
<b>rBook</b> Workshop 2 When Disaster Strikes Skill: Sequence of Events Writing Focus: Narrative Writing	<b>rBook</b> Workshop 8 Turning Points Skill: Compare and Contrast Writing Focus: Descriptive Writing	<b>rBook Flex</b> Workshop 5 Wired for Trouble Skill: Fact and Opinion Writing Focus: Persuasive Writing
<b>rBook</b> Workshop 3 Identity Crisis Skill: Story Elements Writing Focus: Literature Response	<b>rBook</b> Workshop 9 The Streets of Harlem Skill: Make Inferences Writing Focus: Personal Narrative	<b>rBook Flex</b> Workshop 6 Facing the Elements Skill: Story Elements Writing Focus: Literature Review
<b>rBook</b> Workshop 4 Stolen Childhoods Skill: Summarize Writing Focus: Expository Summary	<b>rBook Flex</b> Workshop 1 Eyes on the Graduation Prize Skill: Main Idea & Detail Writing Focus: Expository Writing	<b>rBook Flex</b> Workshop 7 Creatures of the Deep Skill: Cause and Effect Writing Focus: Descriptive Writing
<b>rBook</b> Workshop 5 Under Pressure Skill: Problem and Solution Writing Focus: Persuasive Writing	<b>rBook Flex</b> Workshop 2 Tsunami: Disaster of a Century Skill: Sequence of Events Writing Focus: Narrative Writing	<b>rBook Flex</b> Workshop 8 Going Global Skill: Compare and Contrast Writing Focus: Persuasive Writing
<b>rBook</b> Workshop 6 Poe: The Master of Horror Skill: Story Elements Writing Focus: Literature Review	<b>rBook Flex</b> Workshop 3 Long Journey to Justice Skill: Story Elements Writing Focus: Literature Response	<b>rBook Flex</b> Workshop 9 The Art of the Memoir Skill: Make Inferences Writing Focus: Personal Narrative



## **Appendix B**

### **Targeted Intervention –**

### **Student Outcomes: HLM Output and Student Outcomes: Detailed Tables**



Program: HLM 6 Hierarchical Linear and Nonlinear Modeling  
Authors: Stephen Raudenbush, Tony Bryk, & Richard Congdon  
Publisher: Scientific Software International, Inc. (c) 2000  
techsupport@ssicentral.com  
www.ssicentral.com

-----  
Module: HLM2.EXE (6.06.2857.2)  
Date: 7 January 2011, Friday  
Time: 10:27: 5  
-----

SPECIFICATIONS FOR THIS HLM2 RUN

Problem Title: Vocab\_Overall

The data source for this run = \\rk8\vol805\STRIVING\Data  
Analysis\HLM\Data\MDM\Year 4\Treat1\_678Grade\Overall.mdm

The command file for this run = P:\Data Analysis\HLM\Models\Year  
4\Treat1\_678Grade\Vocab\_Overall.hlm

Output file name = \\rk8\vol805\STRIVING\Data Analysis\HLM\Models\Year  
4\Treat1\_678Grade\Vocab\_Overall.txt

The maximum number of level-1 units = 2555

The maximum number of level-2 units = 19

The maximum number of iterations = 100

Method of estimation: restricted maximum likelihood

Weighting Specification

-----  
Weight

Variable

Weighting? Name Normalized?

Level 1 no

Level 2 no

Precision no

The outcome variable is VOCAB

The model specified for the fixed effects was:

-----  
Level-1 Level-2

Coefficients Predictors

-----  
INTRCPT1, B0 INTRCPT2, G00

TREAT, G01

\$ NELGIBLE, G02

\$ YRIMPROV, G03

\$ NELL, G04

\$ NSPECED, G05

\$ MEANSCHO, G06

## GENDER slope, B1 INTRCPT2, G10

## LEP slope, B2 INTRCPT2, G20

##% SPECED slope, B3 INTRCPT2, G30  
##% RDUMBLK slope, B4 INTRCPT2, G40  
##% GDUMY1\_7 slope, B5 INTRCPT2, G50  
##% GDUMY1\_8 slope, B6 INTRCPT2, G60  
##% GDUMY2\_6 slope, B7 INTRCPT2, G70  
##% GDUMY3\_6 slope, B8 INTRCPT2, G80  
##% GDUMY4\_6 slope, B9 INTRCPT2, G90  
##% SCORENJS slope, B10 INTRCPT2, G100

'#' - The residual parameter variance for this level-1 coefficient has been set to zero.

'%' - This level-1 predictor has been centered around its grand mean.

'\$' - This level-2 predictor has been centered around its grand mean.

The model specified for the covariance components was:

-----  
Sigma squared (constant across level-2 units)

Tau dimensions  
INTRCPT1

Summary of the model specified (in equation format)  
-----

Level-1 Model

$$Y = B0 + B1*(GENDER) + B2*(LEP) + B3*(SPECED) + B4*(RDUMBLK) + B5*(GDUMY1_7) + B6*(GDUMY1_8) + B7*(GDUMY2_6) + B8*(GDUMY3_6) + B9*(GDUMY4_6) + B10*(SCORENJS) + R$$

Level-2 Model

$$B0 = G00 + G01*(TREAT) + G02*(NELGIBLE) + G03*(YRIMPROV) + G04*(NELL) + G05*(NSPECED) + G06*(MEANSCHO) + U0$$
$$\begin{aligned} B1 &= G10 \\ B2 &= G20 \\ B3 &= G30 \\ B4 &= G40 \\ B5 &= G50 \\ B6 &= G60 \\ B7 &= G70 \\ B8 &= G80 \\ B9 &= G90 \\ B10 &= G100 \end{aligned}$$

Run-time deletion has reduced the number of level-1 records to 2256

Iterations stopped due to small change in likelihood function

\*\*\*\*\* ITERATION 6 \*\*\*\*\*

Sigma\_squared = 674.69478

Tau

INTRCPT1,B0 4.68928

Tau (as correlations)

INTRCPT1,B0 1.000

-----  
Random level-1 coefficient Reliability estimate  
-----

INTRCPT1, B0 0.425  
-----

The value of the likelihood function at iteration 6 = -1.053761E+004

The outcome variable is VOCAB

Final estimation of fixed effects:  
-----

Standard Approx.

Fixed Effect Coefficient Error T-ratio d.f. P-value  
-----

For INTRCPT1, B0

INTRCPT2, G00 613.368326 1.198453 511.800 12 0.000

TREAT, G01 1.387250 1.698014 0.817 12 0.430

NELGIBLE, G02 -0.018829 0.044233 -0.426 12 0.677

YRIMPROV, G03 0.187863 0.569715 0.330 12 0.747

NELL, G04 -0.013969 0.067520 -0.207 12 0.840

NSPECED, G05 0.041099 0.078739 0.522 12 0.611

MEANSCHO, G06 0.780565 0.358632 2.177 12 0.050

For GENDER slope, B1

INTRCPT2, G10 4.106570 1.126971 3.644 2239 0.001

For LEP slope, B2

INTRCPT2, G20 -2.561594 1.964320 -1.304 2239 0.193

For SPECED slope, B3

INTRCPT2, G30 -8.115935 1.230057 -6.598 2239 0.000

For RDUMBLK slope, B4

INTRCPT2, G40 0.228849 1.419928 0.161 2239 0.872

For GDUMY1\_7 slope, B5

INTRCPT2, G50 23.293958 1.904809 12.229 2239 0.000

For GDUMY1\_8 slope, B6

INTRCPT2, G60 35.954048 1.870000 19.227 2239 0.000

For GDUMY2\_6 slope, B7

INTRCPT2, G70 -0.850606 1.878972 -0.453 2239 0.650

For GDUMY3\_6 slope, B8

INTRCPT2, G80 4.844106 1.856649 2.609 2239 0.009

For GDUMY4\_6 slope, B9

INTRCPT2, G90 4.877767 1.871098 2.607 2239 0.010

For SCORENJS slope, B10

INTRCPT2, G100 7.187118 0.600289 11.973 2239 0.000  
-----

The outcome variable is VOCAB

Final estimation of fixed effects  
(with robust standard errors)

-----  
Standard Approx.

Fixed Effect Coefficient Error T-ratio d.f. P-value  
-----

For INTRCPT1, B0

INTRCPT2, G00 613.368326 0.978953 626.556 12 0.000

TREAT, G01 1.387250 1.331667 1.042 12 0.319

NELGIBLE, G02 -0.018829 0.033595 -0.560 12 0.585

YRIMPROV, G03 0.187863 0.419752 0.448 12 0.662

NELL, G04 -0.013969 0.038524 -0.363 12 0.723

NSPECED, G05 0.041099 0.052737 0.779 12 0.451

MEANSCHO, G06 0.780565 0.208500 3.744 12 0.003

For GENDER slope, B1

INTRCPT2, G10 4.106570 1.166469 3.521 2239 0.001

For LEP slope, B2

INTRCPT2, G20 -2.561594 1.238423 -2.068 2239 0.038

For SPECED slope, B3

INTRCPT2, G30 -8.115935 1.062454 -7.639 2239 0.000

For RDUMBLK slope, B4

INTRCPT2, G40 0.228849 1.083403 0.211 2239 0.833

For GDUMY1\_7 slope, B5

INTRCPT2, G50 23.293958 1.793063 12.991 2239 0.000

For GDUMY1\_8 slope, B6

INTRCPT2, G60 35.954048 2.365950 15.196 2239 0.000

For GDUMY2\_6 slope, B7

INTRCPT2, G70 -0.850606 1.681229 -0.506 2239 0.612

For GDUMY3\_6 slope, B8

INTRCPT2, G80 4.844106 1.455078 3.329 2239 0.001

For GDUMY4\_6 slope, B9

INTRCPT2, G90 4.877767 2.335847 2.088 2239 0.037

For SCORENJS slope, B10

INTRCPT2, G100 7.187118 0.871867 8.243 2239 0.000  
-----

The robust standard errors are appropriate for datasets having a moderate to large number of level 2 units. These data do not meet this criterion.

Final estimation of variance components:

-----  
Random Effect Standard Variance df Chi-square P-value

Deviation Component  
-----

INTRCPT1, U0 2.16547 4.68928 12 20.14840 0.064

level-1, R 25.97489 674.69478  
-----

Statistics for current covariance components model

-----

Deviance = 21075.212396

Number of estimated parameters = 2

**B1. Analysis Group 1 – Vocabulary -- 1 year of treatment for 6th, 7th, & 8th graders combined**

**Table 1. Vocabulary – Overall**

<b>Fixed Effects</b>					
<b>Effect</b>	<b>Estimate</b>	<b>Standard Error</b>	<b>DF</b>	<b>t Value</b>	<b>Pr &gt;  t </b>
Intercept	613.37	0.98	12	626.56	0.000
Treatment (S)	1.39	1.33	12	1.04	0.319
Num eligible students (S)	-0.02	0.03	12	-0.56	0.585
Yr in need of improvement (S)	0.19	0.42	12	0.45	0.662
Num. ELL students (S)	-0.01	0.04	12	-0.36	0.723
Num. Special Education students (S)	0.04	0.05	12	0.78	0.451
Mean score of schools (S)	0.78	0.21	12	3.74	0.003
<b>GENDER</b>	<b>4.11</b>	<b>1.17</b>	<b>2239</b>	<b>3.52</b>	<b>0.001</b>
English Language Learners	-2.56	1.24	2239	-2.07	0.038
Special Education student	-8.12	1.06	2239	-7.64	0.000
African American	0.23	1.08	2239	0.21	0.833
Grade 7 Year 1	23.29	1.79	2239	12.99	0.000
Grade 8 Year 1	35.95	2.37	2239	15.20	0.000
Grade 6 Year 2	-0.85	1.68	2239	-0.51	0.612
Grade 6 Year 3	4.84	1.46	2239	3.33	0.001
Grade 6 Year 4	4.88	2.34	2239	2.09	0.037
Baseline NJ score	7.19	0.87	2239	8.24	0.000
<b>Random Effects</b>					
<b>Variance Components</b>	<b>Estimate</b>		<b>ICC</b>		
Level-2 Random Intercept	School	4.69	0.007		
Level-1 Residual	Student	674.69			

**Table 2. Vocabulary – Female**

<b>Fixed Effects</b>					
<b>Effect</b>	<b>Estimate</b>	<b>Standard Error</b>	<b>DF</b>	<b>t Value</b>	<b>Pr &gt;  t </b>
Intercept	612.44	1.65	12	371.11	0.000
Treatment (S)	1.33	2.54	12	0.53	0.609
Num eligible students (S)	-0.04	0.08	12	-0.48	0.638
Yr in need of improvement (S)	0.17	0.94	12	0.18	0.862
Num. ELL students (S)	-0.02	0.08	12	-0.29	0.781
Num. Special Education students (S)	0.08	0.13	12	0.61	0.554
Mean score of schools (S)	0.74	0.41	12	1.81	0.094
English Language Learners	-2.31	1.68	945	-1.38	0.169
Special Education student	-7.52	1.83	945	-4.11	0.000
African American	1.20	1.50	945	0.80	0.424
Grade 7 Year 1	24.77	2.53	945	9.78	0.000
Grade 8 Year 1	40.10	4.98	945	8.06	0.000
Grade 6 Year 2	-0.18	1.76	945	-0.10	0.919
Grade 6 Year 3	4.19	2.66	945	1.58	0.114
Grade 6 Year 4	5.27	2.55	945	2.06	0.039
Baseline NJ score	6.76	1.27	945	5.31	0.000
<b>Random Effects</b>					
<b>Variance Components</b>		<b>Estimate</b>		<b>ICC</b>	
Level-2 Random Intercept	School	<b>22.61</b>		<b>0.033</b>	
Level-1 Residual	Student	<b>655.91</b>			

**Table 3. Vocabulary – Male**

<b>Fixed Effects</b>					
<b>Effect</b>	<b>Estimate</b>	<b>Standard</b>		<b>t Value</b>	<b>Pr &gt;  t </b>
		<b>Error</b>	<b>DF</b>		
Intercept	613.60	1.07	12	571.76	0.000
Treatment (S)	2.32	1.25	12	1.85	0.089
Num eligible students (S)	-0.02	0.02	12	-0.85	0.413
Yr in need of improvement (S)	0.02	0.43	12	0.04	0.970
Num. ELL students (S)	0.04	0.04	12	1.06	0.311
Num. Special Education students (S)	0.01	0.04	12	0.37	0.719
Mean score of schools (S)	0.32	0.20	12	1.57	0.142
English Language Learners	-1.91	1.75	1279	-1.10	0.274
Special Education student	-8.78	1.72	1279	-5.10	0.000
African American	-0.54	1.67	1279	-0.33	0.745
Grade 7 Year 1	21.49	2.31	1279	9.32	0.000
Grade 8 Year 1	32.43	2.11	1279	15.35	0.000
Grade 6 Year 2	-1.99	2.27	1279	-0.88	0.381
Grade 6 Year 3	4.57	2.21	1279	2.06	0.039
Grade 6 Year 4	4.38	2.55	1279	1.72	0.086
Baseline NJ score	7.58	0.82	1279	9.21	0.000
<b>Random Effects</b>					
<b>Variance Components</b>		<b>Estimate</b>	<b>ICC</b>		
Level-2 Random Intercept	School	0.64	0.001		
Level-1 Residual	Student	687.91			

**Table 4. Vocabulary - African American**

<b>Fixed Effects</b>					
<b>Effect</b>	<b>Estimate</b>	<b>Standard Error</b>	<b>DF</b>	<b>t Value</b>	<b>Pr &gt;  t </b>
Intercept	614.22	1.34	12	458.18	0.000
Treatment (S)	1.30	1.83	12	0.71	0.492
Num eligible students (S)	-0.01	0.05	12	-0.30	0.768
Yr in need of improvement (S)	0.40	0.58	12	0.68	0.507
Num. ELL students (S)	0.03	0.06	12	0.51	0.616
Num. Special Education students (S)	0.00	0.07	12	-0.05	0.958
Mean score of schools (S)	0.52	0.23	12	2.21	0.047
<b>GENDER</b>	<b>2.99</b>	<b>1.42</b>	<b>1251</b>	<b>2.10</b>	<b>0.035</b>
English Language Learners	-1.82	4.31	1251	-0.42	0.672
Special Education student	-8.87	1.29	1251	-6.88	0.000
Grade 7 Year 1	23.67	2.81	1251	8.41	0.000
Grade 8 Year 1	34.81	2.62	1251	13.28	0.000
Grade 6 Year 2	-0.57	2.34	1251	-0.24	0.808
Grade 6 Year 3	3.82	2.18	1251	1.75	0.080
Grade 6 Year 4	5.61	3.07	1251	1.83	0.067
Baseline NJ score	8.11	1.12	1251	7.22	0.000
<b>Random Effects</b>					
<b>Variance Components</b>	<b>Estimate</b>		<b>ICC</b>		
Level-2 Random Intercept	School	8.16	0.012		
Level-1 Residual	Student	692.26			

**Table 5. Vocabulary – Hispanic**

<b>Fixed Effects</b>					
<b>Effect</b>	<b>Estimate</b>	<b>Standard Error</b>	<b>DF</b>	<b>t Value</b>	<b>Pr &gt;  t </b>
Intercept	612.51	1.63	11	374.91	0.000
Treatment (S)	2.81	1.84	11	1.53	0.154
Num eligible students (S)	0.01	0.04	11	0.25	0.809
Yr in need of improvement (S)	-0.51	0.41	11	-1.24	0.242
Num. ELL students (S)	-0.09	0.07	11	-1.34	0.209
Num. Special Education students (S)	0.00	0.07	11	0.02	0.981
Mean score of schools (S)	-0.06	0.30	11	-0.20	0.848
<b>GENDER</b>	<b>5.55</b>	<b>1.71</b>	<b>929</b>	<b>3.24</b>	<b>0.002</b>
English Language Learners	-1.45	1.08	929	-1.35	0.177
Special Education student	-6.99	1.32	929	-5.29	0.000
Grade 7 Year 1	22.88	2.26	929	10.12	0.000
Grade 8 Year 1	37.56	3.76	929	10.00	0.000
Grade 6 Year 2	-1.86	2.51	929	-0.74	0.458
Grade 6 Year 3	4.92	1.87	929	2.64	0.009
Grade 6 Year 4	3.33	3.23	929	1.03	0.303
Baseline NJ score	6.45	0.89	929	7.24	0.000
<b>Random Effects</b>					
<b>Variance Components</b>		<b>Estimate</b>		<b>ICC</b>	
Level-2 Random Intercept	School	5.97		0.009	
Level-1 Residual	Student	657.16			

**Table 6. Vocabulary - Special Education**

<b>Fixed Effects</b>					
<b>Effect</b>	<b>Estimate</b>	<b>Standard</b>		<b>t Value</b>	<b>Pr &gt;  t </b>
		<b>Error</b>	<b>DF</b>		
Intercept	604.11	1.52	12	396.52	0.000
Treatment (S)	4.03	1.82	12	2.21	0.047
Num eligible students (S)	-0.01	0.05	12	-0.13	0.897
Yr in need of improvement (S)	0.03	0.59	12	0.05	0.964
Num. ELL students (S)	0.05	0.05	12	0.95	0.363
Num. Special Education students (S)	-0.05	0.07	12	-0.67	0.513
Mean score of schools (S)	0.02	0.21	12	0.10	0.925
<b>GENDER</b>	2.95	1.88	882	1.57	0.117
English Language Learners	-2.86	2.23	882	-1.28	0.200
African American	-2.20	1.41	882	-1.56	0.119
Grade 7 Year 1	29.66	3.19	882	9.30	0.000
Grade 8 Year 1	41.53	4.61	882	9.02	0.000
Grade 6 Year 2	1.22	2.83	882	0.43	0.666
Grade 6 Year 3	8.34	3.39	882	2.46	0.014
Grade 6 Year 4	7.36	3.14	882	2.34	0.019
Baseline NJ score	6.94	1.01	882	6.85	0.000
<b>Random Effects</b>					
<b>Variance Components</b>	<b>Estimate</b>		<b>ICC</b>		
Level-2 Random Intercept	School	5.65	0.008		
Level-1 Residual	Student	718.39			

**B2. Analysis Group 2 – Vocabulary -- 2 years of treatment for 7th & 8th graders combined**

**Table 7. Vocabulary –Overall**

<b>Fixed Effects</b>					
<b>Effect</b>	<b>Estimate</b>	<b>Standard</b>		<b>t Value</b>	<b>Pr &gt;  t </b>
		<b>Error</b>	<b>DF</b>		
Intercept	628.20	0.81	12	773.72	0.000
Treatment (S)	1.63	1.15	12	1.41	0.183
Num eligible students (S)	-0.02	0.04	12	-0.55	0.589
Yr in need of improvement (S)	-0.57	0.33	12	-1.73	0.109
Num. ELL students (S)	0.09	0.04	12	2.06	0.061
Num. Special Education students (S)	-0.01	0.06	12	-0.20	0.845
Mean score of schools (S)	-0.04	0.17	12	-0.23	0.826
GENDER	2.25	1.35	1392	1.67	0.095
English Language Learners	-2.44	2.18	1392	-1.12	0.262
Special Education student	-5.69	1.51	1392	-3.76	0.000
African American	2.53	1.61	1392	1.58	0.115
Grade 8 Year 2	17.11	2.51	1392	6.81	0.000
Grade 7 Year 3	3.14	2.12	1392	1.48	0.140
Grade 7 Year 4	1.26	2.09	1392	0.60	0.546
Baseline NJ score	10.50	1.05	1392	10.01	0.000
<b>Random Effects</b>					
<b>Variance Components</b>		<b>Estimate</b>	<b>ICC</b>		
Level-2 Random Intercept	School	1.01	0.002		
Level-1 Residual	Student	538.81			

**Table 8. Vocabulary – Female**

<b>Fixed Effects</b>					
<b>Effect</b>	<b>Estimate</b>	<b>Standard Error</b>	<b>DF</b>	<b>t Value</b>	<b>Pr &gt;  t </b>
Intercept	630.00	0.60	12	1050.74	0.000
Treatment (S)	0.64	0.86	12	0.74	0.473
Num eligible students (S)	-0.03	0.02	12	-1.32	0.211
Yr in need of improvement (S)	-0.30	0.30	12	-1.01	0.334
Num. ELL students (S)	0.00	0.02	12	0.13	0.897
Num. Special Education students (S)	0.01	0.03	12	0.23	0.821
Mean score of schools (S)	0.34	0.11	12	3.08	0.010
English Language Learners	0.21	2.66	599	0.08	0.936
Special Education student	-4.58	2.10	599	-2.18	0.029
African American	1.13	2.18	599	0.52	0.603
Grade 8 Year 2	14.24	4.13	599	3.45	0.001
Grade 7 Year 3	1.88	2.75	599	0.68	0.495
Grade 7 Year 4	0.40	2.64	599	0.15	0.879
Baseline NJ score	9.03	1.19	599	7.58	0.000
<b>Random Effects</b>					
<b>Variance Components</b>	<b>Estimate</b>		<b>ICC</b>		
Level-2 Random Intercept	School	0.11	0.000		
Level-1 Residual	Student	476.12			

**Table 9. Vocabulary – Male**

<b>Fixed Effects</b>					
<b>Effect</b>	<b>Estimate</b>	<b>Standard Error</b>	<b>DF</b>	<b>t Value</b>	<b>Pr &gt;  t </b>
Intercept	626.69	1.40	12	449.08	0.000
Treatment (S)	2.88	2.05	12	1.41	0.185
Num eligible students (S)	-0.02	0.06	12	-0.31	0.764
Yr in need of improvement (S)	-0.89	0.64	12	-1.39	0.189
Num. ELL students (S)	0.13	0.07	12	1.83	0.092
Num. Special Education students (S)	-0.03	0.10	12	-0.31	0.761
Mean score of schools (S)	-0.14	0.21	12	-0.68	0.507
English Language Learners	-5.83	3.49	780	-1.67	0.094
Special Education student	-6.11	1.67	780	-3.65	0.001
African American	3.46	2.47	780	1.40	0.162
Grade 8 Year 2	19.14	2.47	780	7.74	0.000
Grade 7 Year 3	4.01	3.14	780	1.28	0.203
Grade 7 Year 4	2.66	2.48	780	1.07	0.285
Baseline NJ score	11.66	1.29	780	9.01	0.000
<b>Random Effects</b>					
<b>Variance Components</b>	<b>Estimate</b>		<b>ICC</b>		
Level-2 Random Intercept	School	11.97	0.020		
Level-1 Residual	Student	579.58			

**Table 10. Vocabulary - African American**

<b>Fixed Effects</b>					
<b>Effect</b>	<b>Estimate</b>	<b>Standard Error</b>	<b>DF</b>	<b>t Value</b>	<b>Pr &gt;  t </b>
Intercept	629.77	0.96	12	654.47	0.000
Treatment (S)	1.30	1.28	12	1.02	0.329
Num eligible students (S)	-0.01	0.03	12	-0.27	0.794
Yr in need of improvement (S)	-0.31	0.50	12	-0.63	0.541
Num. ELL students (S)	0.13	0.07	12	2.04	0.064
Num. Special Education students (S)	-0.07	0.04	12	-1.74	0.107
Mean score of schools (S)	-0.04	0.10	12	-0.40	0.699
GENDER	3.21	1.56	745	2.06	0.039
English Language Learners	-4.03	3.94	745	-1.02	0.307
Special Education student	-6.17	1.68	745	-3.67	0.000
Grade 8 Year 2	19.93	2.42	745	8.25	0.000
Grade 7 Year 3	5.80	2.36	745	2.46	0.014
Grade 7 Year 4	2.92	2.46	745	1.18	0.237
Baseline NJ score	9.93	0.82	745	12.16	0.000
<b>Random Effects</b>					
<b>Variance Components</b>		<b>Estimate</b>		<b>ICC</b>	
Level-2 Random Intercept	School	0.55		0.001	
Level-1 Residual	Student	527.85			

**Table 11. Hispanic**

<b>Fixed Effects</b>					
<b>Effect</b>	<b>Estimate</b>	<b>Standard Error</b>	<b>DF</b>	<b>t Value</b>	<b>Pr &gt;  t </b>
Intercept	625.89	2.51	10	249.35	0.000
Treatment (S)	5.00	3.78	10	1.32	0.216
Num eligible students (S)	-0.15	0.10	10	-1.50	0.163
Yr in need of improvement (S)	0.29	0.91	10	0.32	0.754
Num. ELL students (S)	-0.10	0.12	10	-0.81	0.438
Num. Special Education students (S)	0.34	0.19	10	1.75	0.110
Mean score of schools (S)	0.30	0.18	10	1.67	0.125
GENDER	0.54	1.97	599	0.28	0.783
English Language Learners	-0.79	2.15	599	-0.37	0.713
Special Education student	-4.66	2.04	599	-2.28	0.023
Grade 8 Year 2	13.60	3.30	599	4.12	0.000
Grade 7 Year 3	0.05	2.44	599	0.02	0.985
Grade 7 Year 4	0.22	2.35	599	0.09	0.927
Baseline NJ score	11.32	1.64	599	6.90	0.000
<b>Random Effects</b>					
<b>Variance Components</b>	<b>Estimate</b>		<b>ICC</b>		
Level-2 Random Intercept	School	35.12	0.059		
Level-1 Residual	Student	556.71			

**Table 12. Vocabulary - Special Education**

<b>Fixed Effects</b>					
<b>Effect</b>	<b>Estimate</b>	<b>Standard Error</b>	<b>DF</b>	<b>t Value</b>	<b>Pr &gt;  t </b>
Intercept	619.98	1.18	12	525.45	0.000
Treatment (S)	2.24	1.81	12	1.24	0.240
Num eligible students (S)	-0.05	0.05	12	-0.96	0.356
Yr in need of improvement (S)	-0.82	0.44	12	-1.86	0.086
Num. ELL students (S)	0.15	0.06	12	2.73	0.019
Num. Special Education students (S)	0.02	0.07	12	0.25	0.806
Mean score of schools (S)	-0.11	0.15	12	-0.71	0.489
<b>GENDER</b>					
English Language Learners	0.81	4.75	581	0.17	0.864
African American	2.93	2.45	581	1.20	0.233
Grade 8 Year 2	18.57	2.91	581	6.37	0.000
Grade 7 Year 3	4.64	2.15	581	2.16	0.031
Grade 7 Year 4	1.08	2.71	581	0.40	0.690
Baseline NJ score	11.17	1.04	581	10.73	0.000
<b>Random Effects</b>					
<b>Variance Components</b>		<b>Estimate</b>		<b>ICC</b>	
Level-2 Random Intercept	School	5.21		0.009	
Level-1 Residual	Student	554.19			

**B3. Analysis Group 3 – Vocabulary -- 3 years of treatment for 8th graders**

**Table 13. Vocabulary – Overall**

<b>Fixed Effects</b>					
<b>Effect</b>	<b>Estimate</b>	<b>Standard</b>		<b>t Value</b>	<b>Pr &gt;  t </b>
		<b>Error</b>	<b>DF</b>		
Intercept	640.95	1.30	12	493.64	0.000
Treatment (S)	0.53	2.08	12	0.26	0.802
Num eligible students (S)	0.02	0.05	12	0.37	0.715
Yr in need of improvement (S)	-0.26	0.72	12	-0.37	0.720
Num. ELL students (S)	0.01	0.07	12	0.16	0.877
Num. Special Education students (S)	-0.07	0.09	12	-0.76	0.465
Mean score of schools (S)	-0.13	0.26	12	-0.51	0.621
GENDER	3.52	2.06	625	1.71	0.088
English Language Learners	-9.62	3.24	625	-2.97	0.004
Special Education student	-6.19	2.07	625	-2.99	0.003
African American	-0.87	3.06	625	-0.29	0.775
Grade 8 Year 4	-0.55	2.02	625	-0.27	0.786
Baseline NJ score	10.93	1.89	625	5.78	0.000
<b>Random Effects</b>					
<b>Variance Components</b>		<b>Estimate</b>	<b>ICC</b>		
Level-2 Random Intercept	School	15.26	0.027		
Level-1 Residual	Student	556.28			

**Table 14. Vocabulary – Female**

<b>Fixed Effects</b>					
<b>Effect</b>	<b>Estimate</b>	<b>Standard</b>		<b>t Value</b>	<b>Pr &gt;  t </b>
		<b>Error</b>	<b>DF</b>		
Intercept	639.55	1.17	12	547.89	0.000
Treatment (S)	2.66	3.03	12	0.88	0.398
Num eligible students (S)	0.07	0.05	12	1.25	0.237
Yr in need of improvement (S)	0.43	0.74	12	0.59	0.569
Num. ELL students (S)	0.07	0.10	12	0.74	0.475
Num. Special Education students (S)	-0.19	0.10	12	-1.92	0.078
Mean score of schools (S)	-0.15	0.30	12	-0.51	0.621
English Language Learners	-2.40	5.64	282	-0.43	0.670
Special Education student	-7.86	2.51	282	-3.13	0.002
African American	4.52	3.27	282	1.38	0.168
Grade 8 Year 4	-0.70	2.09	282	-0.34	0.737
Baseline NJ score	10.92	1.58	282	6.89	0.000
<b>Random Effects</b>					
<b>Variance Components</b>		<b>Estimate</b>	<b>ICC</b>		
Level-2 Random Intercept	School	21.37	0.046		
Level-1 Residual	Student	439.82			

**Table 15. Vocabulary – Male**

<b>Fixed Effects</b>					
<b>Effect</b>	<b>Estimate</b>	<b>Standard</b>		<b>t Value</b>	<b>Pr &gt;  t </b>
		<b>Error</b>	<b>DF</b>		
Intercept	641.53	1.93	12	332.07	0.000
Treatment (S)	-0.38	2.16	12	-0.17	0.865
Num eligible students (S)	-0.06	0.06	12	-0.89	0.391
Yr in need of improvement (S)	-0.64	0.73	12	-0.87	0.399
Num. ELL students (S)	-0.01	0.09	12	-0.16	0.875
Num. Special Education students (S)	0.11	0.13	12	0.84	0.416
Mean score of schools (S)	-0.14	0.27	12	-0.51	0.622
English Language Learners	-19.11	4.70	332	-4.07	0.000
Special Education student	-4.42	3.46	332	-1.28	0.203
African American	-5.16	3.42	332	-1.51	0.132
Grade 8 Year 4	-0.43	3.12	332	-0.14	0.892
Baseline NJ score	11.07	2.54	332	4.36	0.000
<b>Random Effects</b>					
<b>Variance Components</b>		<b>Estimate</b>	<b>ICC</b>		
Level-2 Random Intercept	School	5.28	0.008		
Level-1 Residual	Student	654.81			

**Table 16. Vocabulary – African American**

<b>Fixed Effects</b>					
<b>Effect</b>	<b>Estimate</b>	<b>Standard</b>		<b>t Value</b>	<b>Pr &gt;  t </b>
		<b>Error</b>	<b>DF</b>		
Intercept	638.58	2.30	12	278.04	0.000
Treatment (S)	2.66	2.92	12	0.91	0.381
Num eligible students (S)	0.06	0.05	12	1.10	0.295
Yr in need of improvement (S)	-0.28	1.03	12	-0.27	0.788
Num. ELL students (S)	0.13	0.10	12	1.34	0.206
Num. Special Education students (S)	-0.06	0.10	12	-0.66	0.521
Mean score of schools (S)	-0.36	0.27	12	-1.35	0.204
GENDER	0.89	2.82	350	0.32	0.752
Special Education student	-8.15	2.38	350	-3.42	0.001
Grade 7 Year 4	-0.35	1.74	350	-0.20	0.841
Baseline NJ score	11.38	1.89	350	6.04	0.000
<b>Random Effects</b>					
<b>Variance Components</b>		<b>Estimate</b>	<b>ICC</b>		
Level-2 Random Intercept	School	24.45	0.043		
Level-1 Residual	Student	549.98			

**Table 17. Vocabulary – Hispanic**

<b>Fixed Effects</b>					
<b>Effect</b>	<b>Estimate</b>	<b>Standard</b>		<b>t Value</b>	<b>Pr &gt;  t </b>
		<b>Error</b>	<b>DF</b>		
Intercept	649.11	2.82	8	229.80	0.000
Treatment (S)	-4.52	3.56	8	-1.27	0.240
Num eligible students (S)	-0.13	0.09	8	-1.56	0.157
Yr in need of improvement (S)	1.15	0.67	8	1.70	0.127
Num. ELL students (S)	-0.14	0.14	8	-1.00	0.347
Num. Special Education students (S)	0.20	0.14	8	1.38	0.204
Mean score of schools (S)	-0.36	0.24	8	-1.48	0.177
GENDER	5.25	3.17	255	1.66	0.099
English Language Learners	-7.58	3.27	255	-2.32	0.021
Special Education student	-3.49	3.36	255	-1.04	0.301
Grade 8 Year 4	-0.86	3.66	255	-0.24	0.814
Baseline NJ score	11.08	3.56	255	3.12	0.002
<b>Random Effects</b>					
<b>Variance Components</b>		<b>Estimate</b>	<b>ICC</b>		
Level-2 Random Intercept	School	17.64	0.032		
Level-1 Residual	Student	540.17			

**Table 18. Vocabulary – Special Education**

<b>Fixed Effects</b>					
<b>Effect</b>	<b>Estimate</b>	<b>Standard</b>		<b>t Value</b>	<b>Pr &gt;  t </b>
		<b>Error</b>	<b>DF</b>		
Intercept	634.21	2.35	12	269.739	0
Treatment (S)	0.61	3.29	12	0.19	0.856
Num eligible students (S)	0.04	0.06	12	0.63	0.539
Yr in need of improvement (S)	0.41	1.07	12	0.39	0.705
Num. ELL students (S)	-0.18	0.10	12	-1.70	0.115
Num. Special Education students (S)	0.02	0.09	12	0.26	0.799
Mean score of schools (S)	0.39	0.33	12	1.17	0.263
GENDER	6.23	3.19	272	1.95	0.051
English Language Learners	-15.54	6.43	272	-2.42	0.016
African American	-4.13	3.49	272	-1.18	0.238
Grade 8 Year 4	0.89	2.87	272	0.31	0.758
Baseline NJ score	11.32	2.18	272	5.19	0.000
<b>Random Effects</b>					
<b>Variance Components</b>		<b>Estimate</b>	<b>ICC</b>		
Level-2 Random Intercept	School	19.27	0.036		
Level-1 Residual	Student	519.49			

**B4. Analysis Group 1 – Comprehension -- 1 year of treatment for 6th, 7th, & 8th graders combined**

**Table 19. Comprehension – Overall**

<b>Fixed Effects</b>					
<b>Effect</b>	<b>Estimate</b>	<b>Standard</b>		<b>t Value</b>	<b>Pr &gt;  t </b>
		<b>Error</b>	<b>DF</b>		
Intercept	609.11	0.87	12	697.95	0.000
Treatment (S)	1.13	1.14	12	0.99	0.344
Num eligible students (S)	-0.09	0.02	12	-3.69	0.004
Yr in need of improvement (S)	0.20	0.35	12	0.56	0.588
Num. ELL students (S)	0.00	0.04	12	0.09	0.931
Num. Special Education students (S)	0.18	0.03	12	5.35	0.000
Mean score of schools (S)	0.80	0.23	12	3.49	0.005
<b>GENDER</b>	-2.95	0.98	2335	-3.01	0.003
English Language Learners	-0.75	1.03	2335	-0.74	0.462
Special Education student	-9.71	0.94	2335	-10.28	0.000
African American	-2.50	1.03	2335	-2.44	0.015
Grade 7 Year 1	16.46	2.57	2335	6.39	0.000
Grade 8 Year 1	36.06	1.62	2335	22.32	0.000
Grade 6 Year 2	1.54	2.12	2335	0.73	0.468
Grade 6 Year 3	5.82	2.35	2335	2.48	0.013
Grade 6 Year 4	4.61	3.13	2335	1.47	0.141
Baseline NJ score	6.23	0.72	2335	8.69	0.000
<b>Random Effects</b>					
<b>Variance Components</b>		<b>Estimate</b>	<b>ICC</b>		
Level-2 Random Intercept	School	<b>4.68</b>	<b>0.009</b>		
Level-1 Residual	Student	<b>536.67</b>			

Table 20. Comprehension – Female

<b>Fixed Effects</b>						
<b>Effect</b>	<b>Estimate</b>	<b>Standard</b>		<b>t Value</b>	<b>Pr &gt;  t </b>	
		<b>Error</b>	<b>DF</b>			
Intercept	612.05	0.93	12	661.59	0.000	
Treatment (S)	1.94	1.40	12	1.39	0.190	
Num eligible students (S)	-0.15	0.04	12	-4.19	0.001	
Yr in need of improvement (S)	0.07	0.38	12	0.19	0.857	
Num. ELL students (S)	0.07	0.04	12	1.71	0.113	
Num. Special Education students (S)	0.23	0.05	12	4.15	0.001	
Mean score of schools (S)	0.95	0.23	12	4.08	0.002	
English Language Learners	1.02	1.13	979	0.90	0.369	
Special Education student	-11.47	1.51	979	-7.61	0.000	
African American	-1.00	1.41	979	-0.71	0.478	
Grade 7 Year 1	16.09	2.95	979	5.46	0.000	
Grade 8 Year 1	35.72	2.64	979	13.54	0.000	
Grade 6 Year 2	0.12	3.55	979	0.03	0.974	
Grade 6 Year 3	5.70	3.98	979	1.43	0.153	
Grade 6 Year 4	5.41	4.79	979	1.13	0.260	
Baseline NJ score	5.93	1.09	979	5.44	0.000	
<b>Random Effects</b>						
<b>Variance Components</b>		<b>Estimate</b>		<b>ICC</b>		
Level-2 Random Intercept	School	0.42		0.001		
Level-1 Residual	Student	514.73				

**Table 21. Comprehension – Male**

<b>Fixed Effects</b>					
<b>Effect</b>	<b>Estimate</b>	<b>Standard Error</b>	<b>DF</b>	<b>t Value</b>	<b>Pr &gt;  t </b>
Intercept	606.83	1.21	12	499.90	0.000
Treatment (S)	1.10	1.45	12	0.76	0.462
Num eligible students (S)	-0.05	0.03	12	-1.79	0.098
Yr in need of improvement (S)	0.03	0.47	12	0.07	0.948
Num. ELL students (S)	-0.04	0.06	12	-0.68	0.509
Num. Special Education students (S)	0.14	0.05	12	2.96	0.013
Mean score of schools (S)	0.46	0.20	12	2.26	0.043
English Language Learners	-2.67	1.81	1341	-1.47	0.141
Special Education student	-8.54	1.04	1341	-8.24	0.000
African American	-3.91	1.86	1341	-2.10	0.035
Grade 7 Year 1	16.84	3.50	1341	4.81	0.000
Grade 8 Year 1	36.38	2.51	1341	14.47	0.000
Grade 6 Year 2	2.30	2.70	1341	0.85	0.395
Grade 6 Year 3	5.61	2.41	1341	2.33	0.020
Grade 6 Year 4	4.23	2.87	1341	1.47	0.141
Baseline NJ score	6.37	0.71	1341	8.97	0.000
<b>Random Effects</b>					
<b>Variance Components</b>		<b>Estimate</b>		<b>ICC</b>	
Level-2 Random Intercept	School	7.26		0.013	
Level-1 Residual	Student	554.52			

**Table 22. Comprehension – African American**

<b>Fixed Effects</b>					
<b>Effect</b>	<b>Estimate</b>	<b>Standard Error</b>	<b>DF</b>	<b>t Value</b>	<b>Pr &gt;  t </b>
Intercept	607.77	1.20	12	506.26	0.000
Treatment (S)	2.48	2.23	12	1.11	0.287
Num eligible students (S)	-0.08	0.05	12	-1.71	0.113
Yr in need of improvement (S)	-0.10	0.61	12	-0.16	0.878
Num. ELL students (S)	0.05	0.07	12	0.72	0.488
Num. Special Education students (S)	0.13	0.05	12	2.47	0.030
Mean score of schools (S)	0.23	0.45	12	0.51	0.622
GENDER	-4.17	1.07	1314	-3.89	0.000
English Language Learners	-10.10	11.15	1314	-0.91	0.366
Special Education student	-9.04	1.51	1314	-6.01	0.000
Grade 7 Year 1	16.38	3.36	1314	4.88	0.000
Grade 8 Year 1	35.26	2.11	1314	16.74	0.000
Grade 6 Year 2	2.01	2.67	1314	0.75	0.453
Grade 6 Year 3	4.46	3.31	1314	1.35	0.178
Grade 6 Year 4	6.03	2.64	1314	2.28	0.023
Baseline NJ score	6.84	0.75	1314	9.13	0.000
<b>Random Effects</b>					
<b>Variance Components</b>		<b>Estimate</b>		<b>ICC</b>	
Level-2 Random Intercept	School	21.31		0.041	
Level-1 Residual	Student	501.15			

**Table 23. Comprehension – Hispanic**

<b>Fixed Effects</b>					
<b>Effect</b>	<b>Estimate</b>	<b>Standard Error</b>	<b>DF</b>	<b>t Value</b>	<b>Pr &gt;  t </b>
Intercept	611.53	1.52	11	402.48	0.000
Treatment (S)	1.10	1.62	11	0.68	0.510
Num eligible students (S)	-0.12	0.03	11	-3.85	0.003
Yr in need of improvement (S)	0.01	0.35	11	0.02	0.983
Num. ELL students (S)	-0.09	0.05	11	-1.86	0.090
Num. Special Education students (S)	0.25	0.05	11	4.54	0.001
Mean score of schools (S)	0.13	0.18	11	0.69	0.503
GENDER	-1.86	1.93	960	-0.97	0.335
English Language Learners	0.64	0.98	960	0.65	0.516
Special Education student	-10.41	1.80	960	-5.78	0.000
Grade 7 Year 1	16.83	2.75	960	6.13	0.000
Grade 8 Year 1	37.05	2.49	960	14.91	0.000
Grade 6 Year 2	0.66	3.07	960	0.22	0.829
Grade 6 Year 3	6.35	2.65	960	2.39	0.017
Grade 6 Year 4	1.67	4.72	960	0.35	0.724
Baseline NJ score	5.73	0.97	960	5.91	0.000
<b>Random Effects</b>					
<b>Variance Components</b>		<b>Estimate</b>		<b>ICC</b>	
Level-2 Random Intercept	School	0.79		0.001	
Level-1 Residual	Student	583.31			

**Table 24. Comprehension – Special Education**

<b>Fixed Effects</b>					
<b>Effect</b>	<b>Estimate</b>	<b>Standard</b>		<b>t Value</b>	<b>Pr &gt;  t </b>
		<b>Error</b>	<b>DF</b>		
Intercept	600.19	1.19	12	506.37	0.000
Treatment (S)	1.32	1.57	12	0.84	0.417
Num eligible students (S)	-0.05	0.02	12	-2.08	0.059
Yr in need of improvement (S)	0.01	0.43	12	0.03	0.981
Num. ELL students (S)	0.06	0.04	12	1.62	0.131
Num. Special Education students (S)	0.06	0.04	12	1.43	0.178
Mean score of schools (S)	-0.08	0.14	12	-0.62	0.547
GENDER	-0.64	1.31	906	-0.49	0.624
English Language Learners	4.58	2.24	906	2.05	0.041
African American	-0.94	1.76	906	-0.53	0.594
Grade 7 Year 1	13.33	3.31	906	4.03	0.000
Grade 8 Year 1	32.94	1.95	906	16.87	0.000
Grade 6 Year 2	-3.05	2.20	906	-1.39	0.165
Grade 6 Year 3	1.05	2.81	906	0.38	0.708
Grade 6 Year 4	-1.94	3.15	906	-0.62	0.537
Baseline NJ score	5.66	0.81	906	7.00	0.000
<b>Random Effects</b>					
<b>Variance Components</b>		<b>Estimate</b>	<b>ICC</b>		
Level-2 Random Intercept	School	1.37	0.003		
Level-1 Residual	Student	533.80			

**B5. Analysis Group 2 – Comprehension -- 2 years of treatment for 7th & 8th graders combined**

**Table 25. Comprehension – Overall**

<b>Fixed Effects</b>					
<b>Effect</b>	<b>Estimate</b>	<b>Standard Error</b>	<b>DF</b>	<b>t Value</b>	<b>Pr &gt;  t </b>
Intercept	620.85	0.83	12	751.49	0.000
Treatment (S)	3.59	1.33	12	2.71	0.019
Num eligible students (S)	-0.06	0.02	12	-2.51	0.028
Yr in need of improvement (S)	-0.45	0.33	12	-1.36	0.201
Num. ELL students (S)	0.05	0.05	12	1.14	0.276
Num. Special Education students (S)	0.09	0.07	12	1.31	0.215
Mean score of schools (S)	0.14	0.15	12	0.99	0.343
GENDER	-2.36	1.01	1403	-2.35	0.019
English Language Learners	-2.79	1.84	1403	-1.52	0.129
Special Education student	-6.09	1.53	1403	-3.98	0.000
African American	0.90	1.05	1403	0.86	0.393
Grade 8 Year 2	21.40	2.09	1403	10.26	0.000
Grade 7 Year 3	-0.51	2.27	1403	-0.23	0.821
Grade 7 Year 4	1.32	1.80	1403	0.74	0.462
Baseline NJ score	9.42	0.95	1403	9.93	0.000
<b>Random Effects</b>					
<b>Variance Components</b>		<b>Estimate</b>		<b>ICC</b>	
Level-2 Random Intercept	School	7.38		0.016	
Level-1 Residual	Student	441.69			

**Table 26. Comprehension – Female**

<b>Fixed Effects</b>					
<b>Effect</b>	<b>Estimate</b>	<b>Standard</b>		<b>t Value</b>	<b>Pr &gt;  t </b>
		<b>Error</b>	<b>DF</b>		
Intercept	625.73	0.87	12	719.92	0.000
Treatment (S)	1.08	1.45	12	0.75	0.469
Num eligible students (S)	-0.03	0.02	12	-1.23	0.243
Yr in need of improvement (S)	-0.60	0.40	12	-1.50	0.159
Num. ELL students (S)	0.05	0.03	12	1.47	0.166
Num. Special Education students (S)	0.00	0.06	12	-0.04	0.970
Mean score of schools (S)	0.21	0.14	12	1.54	0.149
English Language Learners	-6.11	3.59	603	-1.70	0.088
Special Education student	-7.87	1.74	603	-4.52	0.000
African American	-0.26	1.57	603	-0.17	0.870
Grade 8 Year 2	19.17	2.43	603	7.88	0.000
Grade 7 Year 3	-4.20	1.78	603	-2.36	0.019
Grade 7 Year 4	-1.77	1.95	603	-0.91	0.365
Baseline NJ score	9.30	1.16	603	8.05	0.000
<b>Random Effects</b>					
<b>Variance Components</b>		<b>Estimate</b>	<b>ICC</b>		
Level-2 Random Intercept	School	4.70	0.010		
Level-1 Residual	Student	449.71			

**Table 27. Comprehension – Male**

<b>Fixed Effects</b>					
<b>Effect</b>	<b>Estimate</b>	<b>Standard</b>		<b>t Value</b>	<b>Pr &gt;  t </b>
		<b>Error</b>	<b>DF</b>		
Intercept	617.19	1.15	12	537.68	0.000
Treatment (S)	5.21	1.47	12	3.56	0.004
Num eligible students (S)	-0.08	0.03	12	-2.70	0.020
Yr in need of improvement (S)	-0.66	0.42	12	-1.58	0.140
Num. ELL students (S)	0.06	0.05	12	1.21	0.249
Num. Special Education students (S)	0.14	0.08	12	1.80	0.096
Mean score of schools (S)	-0.02	0.16	12	-0.14	0.891
English Language Learners	0.60	2.28	787	0.26	0.792
Special Education student	-5.00	1.77	787	-2.83	0.005
African American	1.78	1.63	787	1.09	0.275
Grade 8 Year 2	23.36	2.68	787	8.72	0.000
Grade 7 Year 3	2.44	3.61	787	0.68	0.500
Grade 7 Year 4	3.82	2.65	787	1.44	0.150
Baseline NJ score	9.68	1.20	787	8.06	0.000
<b>Random Effects</b>					
<b>Variance Components</b>		<b>Estimate</b>	<b>ICC</b>		
Level-2 Random Intercept	School	5.88	0.013		
Level-1 Residual	Student	435.67			

**Table 28. Comprehension – African American**

<b>Fixed Effects</b>					
<b>Effect</b>	<b>Estimate</b>	<b>Standard</b>		<b>t Value</b>	<b>Pr &gt;  t </b>
		<b>Error</b>	<b>DF</b>		
Intercept	621.30	1.24	12	502.44	0.000
Treatment (S)	3.99	1.78	12	2.23	0.045
Num eligible students (S)	-0.06	0.03	12	-2.05	0.063
Yr in need of improvement (S)	-0.64	0.51	12	-1.26	0.232
Num. ELL students (S)	0.06	0.06	12	1.06	0.311
Num. Special Education students (S)	0.09	0.07	12	1.25	0.237
Mean score of schools (S)	0.23	0.12	12	1.90	0.081
GENDER	-1.89	1.20	753	-1.57	0.116
English Language Learners	-5.26	3.40	753	-1.55	0.122
Special Education student	-7.81	1.65	753	-4.74	0.000
Grade 8 Year 2	22.81	2.59	753	8.81	0.000
Grade 7 Year 3	0.22	2.59	753	0.09	0.933
Grade 7 Year 4	1.19	2.52	753	0.47	0.638
Baseline NJ score	8.89	0.88	753	10.05	0.000
<b>Random Effects</b>					
<b>Variance Components</b>		<b>Estimate</b>	<b>ICC</b>		
Level-2 Random Intercept	School	13.56	0.031		
Level-1 Residual	Student	420.70			

**Table 29. Comprehension – Hispanic**

<b>Fixed Effects</b>					
<b>Effect</b>	<b>Estimate</b>	<b>Standard</b>		<b>t Value</b>	<b>Pr &gt;  t </b>
		<b>Error</b>	<b>DF</b>		
Intercept	621.54	1.50	10	413.32	0.000
Treatment (S)	1.90	1.90	10	1.00	0.341
Num eligible students (S)	-0.06	0.04	10	-1.48	0.169
Yr in need of improvement (S)	-0.36	0.35	10	-1.04	0.323
Num. ELL students (S)	0.00	0.08	10	0.01	0.992
Num. Special Education students (S)	0.12	0.07	10	1.69	0.121
Mean score of schools (S)	0.04	0.11	10	0.38	0.714
GENDER	-4.10	1.53	602	-2.67	0.008
English Language Learners	-2.37	1.84	602	-1.29	0.199
Special Education student	-4.40	2.09	602	-2.11	0.035
Grade 8 Year 2	19.68	2.81	602	6.99	0.000
Grade 7 Year 3	-0.29	3.56	602	-0.08	0.935
Grade 7 Year 4	0.83	2.04	602	0.41	0.683
Baseline NJ score	9.54	1.58	602	6.02	0.000
<b>Random Effects</b>					
<b>Variance Components</b>		<b>Estimate</b>	<b>ICC</b>		
Level-2 Random Intercept	School	0.17	0.000		
Level-1 Residual	Student	466.74			

**Table 30. Comprehension – Special Education**

<b>Fixed Effects</b>					
<b>Effect</b>	<b>Estimate</b>	<b>Standard Error</b>	<b>DF</b>	<b>t Value</b>	<b>Pr &gt;  t </b>
Intercept	611.20	1.33	12	458.99	0.000
Treatment (S)	5.52	1.70	12	3.26	0.007
Num eligible students (S)	-0.16	0.04	12	-4.61	0.001
Yr in need of improvement (S)	-0.25	0.39	12	-0.63	0.538
Num. ELL students (S)	0.23	0.05	12	4.61	0.001
Num. Special Education students (S)	0.20	0.07	12	2.93	0.013
Mean score of schools (S)	0.15	0.11	12	1.29	0.223
<b>GENDER</b>					
English Language Learners	2.59	1.76	583	1.47	0.143
African American	0.63	1.70	583	0.37	0.708
Grade 8 Year 2	21.65	2.75	583	7.88	0.000
Grade 7 Year 3	-1.22	3.42	583	-0.36	0.721
Grade 7 Year 3	2.36	2.62	583	0.90	0.368
Baseline NJ score	9.54	1.10	583	8.64	0.000
<b>Random Effects</b>					
<b>Variance Components</b>		<b>Estimate</b>		<b>ICC</b>	
Level-2 Random Intercept	School	5.44		0.012	
Level-1 Residual	Student	452.80			

**B10. Analysis Group 3 – Comprehension -- 3 years of treatment for 8th graders**

**Table 31. Comprehension – Overall**

<b>Fixed Effects</b>					
<b>Effect</b>	<b>Estimate</b>	<b>Standard</b>		<b>t Value</b>	<b>Pr &gt;  t </b>
		<b>Error</b>	<b>DF</b>		
Intercept	640.46	1.35	12	474.71	0.000
Treatment (S)	2.26	1.91	12	1.18	0.261
Num eligible students (S)	-0.02	0.04	12	-0.68	0.512
Yr in need of improvement (S)	-0.42	0.51	12	-0.82	0.431
Num. ELL students (S)	0.08	0.08	12	1.05	0.317
Num. Special Education students (S)	-0.03	0.05	12	-0.56	0.589
Mean score of schools (S)	-0.20	0.15	12	-1.36	0.198
GENDER	1.29	1.81	625	0.71	0.479
English Language Learners	3.19	1.77	625	1.80	0.071
Special Education student	-4.82	2.04	625	-2.36	0.018
African American	-1.51	1.65	625	-0.91	0.361
Grade 8 Year 4	-0.52	2.42	625	-0.22	0.829
Baseline NJ score	10.90	1.45	625	7.51	0.000
<b>Random Effects</b>					
<b>Variance Components</b>		<b>Estimate</b>		<b>ICC</b>	
Level-2 Random Intercept	School	5.62		0.013	
Level-1 Residual	Student	429.95			

**Table 32. Comprehension – Female**

<b>Fixed Effects</b>					
<b>Effect</b>	<b>Estimate</b>	<b>Standard</b>		<b>t Value</b>	<b>Pr &gt;  t </b>
		<b>Error</b>	<b>DF</b>		
Intercept	643.55	1.74	12	370.08	0.000
Treatment (S)	-0.57	2.75	12	-0.21	0.840
Num eligible students (S)	-0.02	0.06	12	-0.38	0.712
Yr in need of improvement (S)	-0.78	0.60	12	-1.29	0.220
Num. ELL students (S)	0.12	0.11	12	1.03	0.323
Num. Special Education students (S)	-0.13	0.08	12	-1.66	0.123
Mean score of schools (S)	0.07	0.18	12	0.40	0.693
English Language Learners	2.11	4.43	282	0.48	0.633
Special Education student	-5.22	2.98	282	-1.75	0.081
African American	1.64	2.36	282	0.70	0.487
Grade 8 Year 4	-2.97	3.08	282	-0.96	0.337
Baseline NJ score	11.63	1.89	282	6.14	0.000
<b>Random Effects</b>					
<b>Variance Components</b>		<b>Estimate</b>		<b>ICC</b>	
Level-2 Random Intercept	School	10.83		0.028	
Level-1 Residual	Student	380.33			

**Table 33. Comprehension – Male**

<b>Fixed Effects</b>					
<b>Effect</b>	<b>Estimate</b>	<b>Standard Error</b>	<b>DF</b>	<b>t Value</b>	<b>Pr &gt;  t </b>
Intercept	638.31	2.29	12	278.98	0.000
Treatment (S)	3.57	2.50	12	1.43	0.178
Num eligible students (S)	-0.06	0.05	12	-1.28	0.226
Yr in need of improvement (S)	-0.36	0.79	12	-0.46	0.651
Num. ELL students (S)	0.04	0.10	12	0.43	0.673
Num. Special Education students (S)	0.11	0.09	12	1.19	0.258
Mean score of schools (S)	-0.29	0.22	12	-1.29	0.222
English Language Learners	3.65	2.78	332	1.31	0.191
Special Education student	-4.85	2.39	332	-2.03	0.043
African American	-4.18	1.86	332	-2.25	0.025
Grade 8 Year 4	1.26	3.35	332	0.38	0.707
Baseline NJ score	10.49	1.37	332	7.63	0.000
<b>Random Effects</b>					
<b>Variance Components</b>		<b>Estimate</b>		<b>ICC</b>	
Level-2 Random Intercept	School	10.92		0.023	
Level-1 Residual	Student	466.02			

**Table 34. Comprehension – African American**

<b>Fixed Effects</b>					
<b>Effect</b>	<b>Estimate</b>	<b>Standard Error</b>	<b>DF</b>	<b>t Value</b>	<b>Pr &gt;  t </b>
Intercept	636.30	1.74	12	364.96	0.000
Treatment (S)	5.34	2.35	12	2.27	0.042
Num eligible students (S)	-0.06	0.05	12	-1.18	0.262
Yr in need of improvement (S)	0.18	0.90	12	0.20	0.843
Num. ELL students (S)	0.17	0.10	12	1.62	0.131
Num. Special Education students (S)	0.08	0.07	12	1.07	0.307
Mean score of schools (S)	-0.33	0.21	12	-1.57	0.142
GENDER	-0.48	2.52	350	-0.19	0.850
Special Education student	-9.30	1.91	350	-4.88	0.000
Grade 8 Year 4	0.62	2.22	350	0.28	0.781
Baseline NJ score	11.32	1.57	350	7.19	0.000
<b>Random Effects</b>					
<b>Variance Components</b>		<b>Estimate</b>		<b>ICC</b>	
Level-2 Random Intercept	School	13.28		0.028	
Level-1 Residual	Student	463.92			

**Table 35. Comprehension – Hispanic**

<b>Fixed Effects</b>					
<b>Effect</b>	<b>Estimate</b>	<b>Standard</b>		<b>t Value</b>	<b>Pr &gt;  t </b>
		<b>Error</b>	<b>DF</b>		
Intercept	645.13	2.89	8	223.33	0.000
Treatment (S)	-0.46	3.69	8	-0.13	0.904
Num eligible students (S)	-0.02	0.06	8	-0.29	0.782
Yr in need of improvement (S)	-0.04	0.57	8	-0.07	0.944
Num. ELL students (S)	0.06	0.14	8	0.40	0.701
Num. Special Education students (S)	-0.09	0.11	8	-0.80	0.446
Mean score of schools (S)	-0.04	0.21	8	-0.20	0.847
GENDER	3.10	2.17	255	1.43	0.154
English Language Learners	5.42	2.04	255	2.65	0.009
Special Education student	0.82	2.52	255	0.33	0.744
Grade 8 Year 4	-2.54	4.61	255	-0.55	0.582
Baseline NJ score	11.11	2.41	255	4.60	0.000
<b>Random Effects</b>					
<b>Variance Components</b>		<b>Estimate</b>		<b>ICC</b>	
Level-2 Random Intercept	School	0.20		0.001	
Level-1 Residual	Student	382.21			

**Table 36. Comprehension – Special Education**

<b>Fixed Effects</b>					
<b>Effect</b>	<b>Estimate</b>	<b>Standard</b>		<b>t Value</b>	<b>Pr &gt;  t </b>
		<b>Error</b>	<b>DF</b>		
Intercept	632.14	2.59	12	244.17	0.000
Treatment (S)	5.03	2.98	12	1.69	0.116
Num eligible students (S)	-0.08	0.07	12	-1.13	0.280
Yr in need of improvement (S)	0.00	0.59	12	0.00	0.998
Num. ELL students (S)	0.10	0.09	12	1.14	0.278
Num. Special Education students (S)	0.09	0.11	12	0.82	0.430
Mean score of schools (S)	0.03	0.25	12	0.14	0.891
GENDER	3.05	2.29	272	1.34	0.183
English Language Learners	5.02	3.40	272	1.48	0.140
African American	-5.46	2.42	272	-2.26	0.025
Grade 8 Year 4	-4.74	2.63	272	-1.81	0.072
Baseline NJ score	12.59	1.47	272	8.58	0.000
<b>Random Effects</b>					
<b>Variance Components</b>		<b>Estimate</b>		<b>ICC</b>	
Level-2 Random Intercept	School	1.72		0.004	
Level-1 Residual	Student	450.48			

**B7. Analysis Group 1 – Language Arts -- 1 year of treatment for 6th, 7th, & 8th graders combined**

**Table 37. Language Arts – Overall**

<b>Fixed Effects</b>					
<b>Effect</b>	<b>Estimate</b>	<b>Standard</b>		<b>t Value</b>	<b>Pr &gt;  t </b>
		<b>Error</b>	<b>DF</b>		
Intercept	598.40	0.49	12	1218.48	0.000
Treatment (S)	0.70	0.79	12	0.88	0.397
Num eligible students (S)	-0.10	0.02	12	-5.15	0.000
Yr in need of improvement (S)	0.41	0.34	12	1.20	0.253
Num. ELL students (S)	0.04	0.02	12	1.87	0.086
Num. Special Education students (S)	0.20	0.02	12	9.80	0.000
Mean score of schools (S)	0.61	0.22	12	2.83	0.016
<b>GENDER</b>	-6.60	1.01	2201	-6.53	0.000
English Language Learners	-4.13	1.32	2201	-3.13	0.002
Special Education student	-11.16	1.06	2201	-10.49	0.000
African American	-2.03	0.90	2201	-2.26	0.024
Grade 7 Year 1	14.59	2.30	2201	6.35	0.000
Grade 8 Year 1	27.02	1.44	2201	18.75	0.000
Grade 6 Year 2	-2.12	1.64	2201	-1.29	0.196
Grade 6 Year 3	-0.93	1.58	2201	-0.59	0.557
Grade 6 Year 4	0.93	2.49	2201	0.37	0.708
Baseline NJ score	5.68	0.62	2201	9.13	0.000
<b>Random Effects</b>					
<b>Variance Components</b>	<b>Estimate</b>		<b>ICC</b>		
Level-2 Random Intercept	School	2.46	0.006		
Level-1 Residual	Student	440.12			

**Table 38. Language Arts – Female**

<b>Fixed Effects</b>					
<b>Effect</b>	<b>Estimate</b>	<b>Standard</b>		<b>t Value</b>	<b>Pr &gt;  t </b>
		<b>Error</b>	<b>DF</b>		
Intercept	603.00	0.83	12	722.37	0.000
Treatment (S)	2.10	1.32	12	1.59	0.137
Num eligible students (S)	-0.17	0.04	12	-4.16	0.001
Yr in need of improvement (S)	0.00	0.39	12	-0.01	0.992
Num. ELL students (S)	0.12	0.05	12	2.55	0.026
Num. Special Education students (S)	0.26	0.07	12	3.98	0.002
Mean score of schools (S)	0.48	0.18	12	2.59	0.024
English Language Learners	-5.16	1.84	919	-2.80	0.006
Special Education student	-13.66	1.20	919	-11.40	0.000
African American	-2.19	1.51	919	-1.45	0.147
Grade 7 Year 1	13.37	2.90	919	4.61	0.000
Grade 8 Year 1	26.09	2.54	919	10.27	0.000
Grade 6 Year 2	-0.51	2.39	919	-0.21	0.833
Grade 6 Year 3	-0.29	2.03	919	-0.14	0.888
Grade 6 Year 4	0.32	2.82	919	0.11	0.911
Baseline NJ score	6.91	0.85	919	8.11	0.000
<b>Random Effects</b>					
<b>Variance Components</b>		<b>Estimate</b>		<b>ICC</b>	
Level-2 Random Intercept	School	0.30		0.001	
Level-1 Residual	Student	452.26			

**Table 39. Language Arts – Male**

<b>Fixed Effects</b>					
<b>Effect</b>	<b>Estimate</b>	<b>Standard Error</b>	<b>DF</b>	<b>t Value</b>	<b>Pr &gt;  t </b>
Intercept	594.96	0.92	12	644.73	0.000
Treatment (S)	0.16	1.29	12	0.13	0.902
Num eligible students (S)	-0.06	0.04	12	-1.42	0.181
Yr in need of improvement (S)	0.57	0.51	12	1.11	0.289
Num. ELL students (S)	-0.03	0.04	12	-0.74	0.475
Num. Special Education students (S)	0.14	0.06	12	2.20	0.048
Mean score of schools (S)	0.57	0.25	12	2.27	0.043
English Language Learners	-3.64	1.79	1267	-2.03	0.042
Special Education student	-9.59	1.54	1267	-6.24	0.000
African American	-2.51	1.30	1267	-1.93	0.054
Grade 7 Year 1	15.92	2.45	1267	6.50	0.000
Grade 8 Year 1	28.45	1.43	1267	19.97	0.000
Grade 6 Year 2	-2.91	1.87	1267	-1.55	0.120
Grade 6 Year 3	-1.17	2.14	1267	-0.55	0.585
Grade 6 Year 4	1.48	2.86	1267	0.52	0.604
Baseline NJ score	4.87	0.72	1267	6.80	0.000
<b>Random Effects</b>					
<b>Variance Components</b>		<b>Estimate</b>		<b>ICC</b>	
Level-2 Random Intercept	School	8.82		0.020	
Level-1 Residual	Student	426.64			

**Table 40. Language Arts –African American**

<b>Fixed Effects</b>					
<b>Effect</b>	<b>Standard</b>			<b>t Value</b>	<b>Pr &gt;  t </b>
	<b>Estimate</b>	<b>Error</b>	<b>DF</b>		
Intercept	597.63	0.70	12.00	858.477	0.00
Treatment (S)	1.73	1.15	12.00	1.499	0.16
Num eligible students (S)	-0.10	0.03	12.00	-3.724	0.00
Yr in need of improvement (S)	0.35	0.37	12.00	0.943	0.36
Num. ELL students (S)	0.06	0.04	12.00	1.417	0.18
Num. Special Education students (S)	0.15	0.03	12.00	6.038	0.00
Mean score of schools (S)	0.34	0.21	12.00	1.638	0.13
GENDER	-6.80	1.19	1226.00	-5.729	0.00
English Language Learners	-8.31	6.48	1226.00	-1.283	0.20
Special Education student	-10.29	1.25	1226.00	-8.228	0.00
Grade 7 Year 1	14.01	2.19	1226.00	6.409	0.00
Grade 8 Year 1	25.56	1.97	1226.00	12.993	0.00
Grade 6 Year 2	-0.07	2.19	1226.00	-0.032	0.98
Grade 6 Year 3	-0.47	2.13	1226.00	-0.221	0.83
Grade 6 Year 4	0.47	2.50	1226.00	0.189	0.85
Baseline NJ score	6.44	0.67	1226.00	9.579	0.00
<b>Random Effects</b>					
<b>Variance Components</b>		<b>Estimate</b>	<b>ICC</b>		
Level-2 Random Intercept	School	2.00	0.005		
Level-1 Residual	Student	432.66			

**Table 41. Language Arts – Hispanic**

<b>Fixed Effects</b>					
<b>Effect</b>	<b>Estimate</b>	<b>Standard</b>		<b>t Value</b>	<b>Pr &gt;  t </b>
		<b>Error</b>	<b>DF</b>		
Intercept	599.61	1.01	11	594.78	0.000
Treatment (S)	-0.25	1.17	11	-0.22	0.833
Num eligible students (S)	-0.13	0.03	11	-4.38	0.001
Yr in need of improvement (S)	0.37	0.34	11	1.11	0.290
Num. ELL students (S)	-0.01	0.04	11	-0.33	0.745
Num. Special Education students (S)	0.27	0.05	11	5.83	0.000
Mean score of schools (S)	0.47	0.15	11	3.10	0.011
<b>GENDER</b>	-6.07	1.73	915	-3.50	0.001
English Language Learners	-3.67	1.21	915	-3.04	0.003
Special Education student	-12.14	1.91	915	-6.34	0.000
Grade 7 Year 1	15.54	3.25	915	4.78	0.000
Grade 8 Year 1	28.95	1.94	915	14.91	0.000
Grade 6 Year 2	-5.12	1.68	915	-3.04	0.003
Grade 6 Year 3	-1.32	2.20	915	-0.60	0.550
Grade 6 Year 4	1.44	3.68	915	0.39	0.696
Baseline NJ score	4.94	0.85	915	5.82	0.000
<b>Random Effects</b>					
<b>Variance Components</b>	<b>Estimate</b>		<b>ICC</b>		
Level-2 Random Intercept	School	1.64	0.004		
Level-1 Residual	Student	459.22			

**Table 42. Language Arts – Special Education**

<b>Fixed Effects</b>					
<b>Effect</b>	<b>Estimate</b>	<b>Standard Error</b>	<b>DF</b>	<b>t Value</b>	<b>Pr &gt;  t </b>
Intercept	588.63	0.92	12	636.76	0.000
Treatment (S)	1.06	1.38	12	0.77	0.459
Num eligible students (S)	-0.03	0.03	12	-0.97	0.351
Yr in need of improvement (S)	0.71	0.47	12	1.50	0.160
Num. ELL students (S)	0.05	0.04	12	1.24	0.239
Num. Special Education students (S)	0.05	0.04	12	1.07	0.307
Mean score of schools (S)	-0.14	0.15	12	-0.92	0.374
GENDER	-3.86	1.44	868	-2.68	0.008
English Language Learners	1.65	2.14	868	0.77	0.440
African American	-0.61	1.53	868	-0.40	0.693
Grade 7 Year 1	12.75	3.96	868	3.22	0.002
Grade 8 Year 1	26.23	1.72	868	15.29	0.000
Grade 6 Year 2	-6.04	1.76	868	-3.44	0.001
Grade 6 Year 3	-3.33	2.13	868	-1.57	0.118
Grade 6 Year 4	-2.25	3.09	868	-0.73	0.468
Baseline NJ score	4.70	0.64	868	7.34	0.000
<b>Random Effects</b>					
<b>Variance Components</b>	<b>Estimate</b>		<b>ICC</b>		
Level-2 Random Intercept	School	3.24	0.009		
Level-1 Residual	Student	365.01			

**B8. Analysis Group 2 – Comprehension -- 2 years of treatment for 7th & 8th graders combined**

**Table 43. Language Arts – Overall**

<b>Fixed Effects</b>					
<b>Effect</b>	<b>Estimate</b>	<b>Standard</b>		<b>t Value</b>	<b>Pr &gt;  t </b>
		<b>Error</b>	<b>DF</b>		
Intercept	609.12	1.41	12	432.73	0.000
Treatment (S)	2.11	1.93	12	1.10	0.295
Num eligible students (S)	-0.08	0.05	12	-1.42	0.182
Yr in need of improvement (S)	-0.12	0.43	12	-0.29	0.779
Num. ELL students (S)	0.17	0.07	12	2.33	0.038
Num. Special Education students (S)	0.07	0.10	12	0.69	0.506
Mean score of schools (S)	0.15	0.19	12	0.79	0.446
<b>GENDER</b>	-6.09	0.95	1385	-6.39	0.000
English Language Learners	-3.58	2.25	1385	-1.59	0.113
Special Education student	-8.24	1.36	1385	-6.07	0.000
African American	-0.63	1.38	1385	-0.46	0.645
Grade 8 Year 2	13.92	2.53	1385	5.51	0.000
Grade 7 Year 3	-1.59	2.39	1385	-0.67	0.506
Grade 7 Year 4	-2.70	2.31	1385	-1.17	0.242
Baseline NJ score	9.15	0.88	1385	10.41	0.000
<b>Random Effects</b>					
<b>Variance Components</b>	<b>Estimate</b>		<b>ICC</b>		
Level-2 Random Intercept	School	15.41	0.036		
Level-1 Residual	Student	414.95			

**Table 44. Language Arts – Female**

<b>Fixed Effects</b>					
<b>Effect</b>	<b>Estimate</b>	<b>Standard</b>		<b>t Value</b>	<b>Pr &gt;  t </b>
		<b>Error</b>	<b>DF</b>		
Intercept	615.12	1.22	12	504.00	0.000
Treatment (S)	1.48	1.44	12	1.02	0.327
Num eligible students (S)	-0.09	0.04	12	-2.34	0.038
Yr in need of improvement (S)	0.19	0.38	12	0.50	0.627
Num. ELL students (S)	0.21	0.06	12	3.30	0.007
Num. Special Education students (S)	0.07	0.09	12	0.81	0.436
Mean score of schools (S)	0.35	0.15	12	2.27	0.043
English Language Learners	-4.04	2.57	596	-1.57	0.117
Special Education student	-10.74	1.73	596	-6.22	0.000
African American	-0.77	2.20	596	-0.35	0.726
Grade 8 Year 2	9.50	2.81	596	3.39	0.001
Grade 7 Year 3	-4.14	2.59	596	-1.60	0.110
Grade 7 Year 4	-5.23	2.38	596	-2.20	0.028
Baseline NJ score	10.27	1.12	596	9.18	0.000
<b>Random Effects</b>					
<b>Variance Components</b>		<b>Estimate</b>		<b>ICC</b>	
Level-2 Random Intercept	School	2.89		0.007	
Level-1 Residual	Student	439.78			

**Table 45. Language Arts – Male**

<b>Fixed Effects</b>					
<b>Effect</b>	<b>Estimate</b>	<b>Standard</b>		<b>t Value</b>	<b>Pr &gt;  t </b>
		<b>Error</b>	<b>DF</b>		
Intercept	604.59	1.69	12	358.64	0.000
Treatment (S)	2.43	2.38	12	1.02	0.328
Num eligible students (S)	-0.06	0.07	12	-0.86	0.406
Yr in need of improvement (S)	-0.38	0.60	12	-0.63	0.542
Num. ELL students (S)	0.12	0.08	12	1.48	0.166
Num. Special Education students (S)	0.06	0.12	12	0.52	0.610
Mean score of schools (S)	0.13	0.23	12	0.55	0.589
English Language Learners	-2.90	2.11	776	-1.38	0.169
Special Education student	-6.66	1.77	776	-3.77	0.000
African American	-0.25	1.72	776	-0.15	0.883
Grade 8 Year 2	17.11	2.69	776	6.37	0.000
Grade 7 Year 3	0.86	3.09	776	0.28	0.780
Grade 7 Year 4	-1.01	2.84	776	-0.36	0.721
Baseline NJ score	8.45	0.91	776	9.28	0.000
<b>Random Effects</b>					
<b>Variance Components</b>		<b>Estimate</b>		<b>ICC</b>	
Level-2 Random Intercept	School	21.21		0.051	
Level-1 Residual	Student	394.11			

**Table 46. Language Arts – African American**

<b>Fixed Effects</b>					
<b>Effect</b>	<b>Estimate</b>	<b>Standard</b>		<b>t Value</b>	<b>Pr &gt;  t </b>
		<b>Error</b>	<b>DF</b>		
Intercept	608.82	1.58	12	385.85	0.000
Treatment (S)	2.26	2.24	12	1.01	0.333
Num eligible students (S)	-0.06	0.06	12	-1.02	0.329
Yr in need of improvement (S)	-0.39	0.59	12	-0.66	0.524
Num. ELL students (S)	0.20	0.08	12	2.66	0.021
Num. Special Education students (S)	0.06	0.11	12	0.54	0.600
Mean score of schools (S)	0.05	0.18	12	0.28	0.784
GENDER	-5.50	1.09	744	-5.03	0.000
English Language Learners	-6.58	3.76	744	-1.75	0.080
Special Education student	-8.70	1.89	744	-4.60	0.000
Grade 8 Year 2	17.23	2.35	744	7.34	0.000
Grade 7 Year 3	1.72	3.18	744	0.54	0.589
Grade 7 Year 4	0.45	2.47	744	0.18	0.856
Baseline NJ score	8.06	1.04	744	7.73	0.000
<b>Random Effects</b>					
<b>Variance Components</b>		<b>Estimate</b>		<b>ICC</b>	
Level-2 Random Intercept	School	24.77		0.060	
Level-1 Residual	Student	385.47			

**Table 47. Language Arts – Hispanic**

<b>Fixed Effects</b>					
<b>Effect</b>	<b>Estimate</b>	<b>Standard</b>		<b>t Value</b>	<b>Pr &gt;  t </b>
		<b>Error</b>	<b>DF</b>		
Intercept	609.28	1.67	10	364.26	0.000
Treatment (S)	3.49	1.68	10	2.08	0.064
Num eligible students (S)	-0.20	0.04	10	-5.23	0.000
Yr in need of improvement (S)	0.39	0.31	10	1.27	0.234
Num. ELL students (S)	0.10	0.07	10	1.55	0.151
Num. Special Education students (S)	0.33	0.07	10	5.03	0.000
Mean score of schools (S)	0.23	0.14	10	1.69	0.121
GENDER	-7.75	1.67	593	-4.64	0.000
English Language Learners	-2.48	1.61	593	-1.54	0.124
Special Education student	-8.07	1.89	593	-4.27	0.000
Grade 8 Year 2	9.33	3.03	593	3.08	0.003
Grade 7 Year 3	-5.18	3.33	593	-1.56	0.120
Grade 7 Year 4	-6.68	3.74	593	-1.79	0.074
Baseline NJ score	10.53	1.21	593	8.68	0.000
<b>Random Effects</b>					
<b>Variance Components</b>		<b>Estimate</b>		<b>ICC</b>	
Level-2 Random Intercept	School	0.09		0.000	
Level-1 Residual	Student	448.52			

**Table 48. Language Arts – Special Education**

<b>Fixed Effects</b>					
<b>Effect</b>	<b>Estimate</b>	<b>Standard</b>		<b>t Value</b>	<b>Pr &gt;  t </b>
		<b>Error</b>	<b>DF</b>		
Intercept	600.37	2.13	12	281.85	0.000
Treatment (S)	1.76	2.55	12	0.69	0.504
Num eligible students (S)	-0.11	0.07	12	-1.67	0.120
Yr in need of improvement (S)	0.47	0.52	12	0.92	0.377
Num. ELL students (S)	0.27	0.08	12	3.47	0.005
Num. Special Education students (S)	0.03	0.09	12	0.28	0.783
Mean score of schools (S)	0.17	0.17	12	0.98	0.345
GENDER	-2.83	1.42	575	-2.00	0.046
English Language Learners	-0.25	2.63	575	-0.10	0.924
African American	0.17	1.76	575	0.10	0.924
Grade 8 Year 2	16.02	2.90	575	5.53	0.000
Grade 7 Year 3	-0.71	3.21	575	-0.22	0.824
Grade 7 Year 4	-0.80	2.64	575	-0.30	0.762
Baseline NJ score	8.62	1.12	575	7.73	0.000
<b>Random Effects</b>					
<b>Variance Components</b>	<b>Estimate</b>		<b>ICC</b>		
Level-2 Random Intercept	School	21.25	0.046		
Level-1 Residual	Student	439.20			

**B9. Analysis Group 3 – Comprehension -- 3 years of treatment for 8th graders**

**Table 49. Language Arts – Overall**

<b>Fixed Effects</b>					
<b>Effect</b>	<b>Estimate</b>	<b>Standard</b>		<b>t Value</b>	<b>Pr &gt;  t </b>
		<b>Error</b>	<b>DF</b>		
Intercept	621.20	0.82	12	760.15	0.000
Treatment (S)	2.67	1.57	12	1.70	0.114
Num eligible students (S)	-0.01	0.03	12	-0.45	0.658
Yr in need of improvement (S)	-0.05	0.51	12	-0.09	0.930
Num. ELL students (S)	0.12	0.06	12	1.95	0.075
Num. Special Education students (S)	-0.13	0.05	12	-2.91	0.014
Mean score of schools (S)	-0.19	0.12	12	-1.69	0.117
GENDER	-4.94	1.42	622	-3.49	0.001
English Language Learners	-3.90	2.82	622	-1.39	0.167
Special Education student	-6.46	1.65	622	-3.92	0.000
African American	-1.22	2.08	622	-0.59	0.557
Grade 8 Year 4	-3.51	2.02	622	-1.74	0.082
Baseline NJ score	9.62	1.25	622	7.68	0.000
<b>Random Effects</b>					
<b>Variance Components</b>		<b>Estimate</b>		<b>ICC</b>	
Level-2 Random Intercept	School	7.53		0.018	
Level-1 Residual	Student	411.99			

**Table 50. Language Arts – Female**

<b>Fixed Effects</b>					
<b>Effect</b>	<b>Estimate</b>	<b>Standard</b>		<b>t Value</b>	<b>Pr &gt;  t </b>
		<b>Error</b>	<b>DF</b>		
Intercept	624.63	1.35	12	462.86	0.000
Treatment (S)	3.55	2.60	12	1.37	0.197
Num eligible students (S)	0.00	0.05	12	-0.06	0.957
Yr in need of improvement (S)	0.25	0.90	12	0.28	0.785
Num. ELL students (S)	0.23	0.09	12	2.44	0.031
Num. Special Education students (S)	-0.15	0.08	12	-1.92	0.078
Mean score of schools (S)	-0.23	0.20	12	-1.12	0.284
English Language Learners	-3.65	4.44	280	-0.82	0.412
Special Education student	-7.38	1.90	280	-3.90	0.000
African American	1.27	4.23	280	0.30	0.764
Grade 8 Year 4	-4.11	2.92	280	-1.41	0.161
Baseline NJ score	10.16	1.68	280	6.06	0.000
<b>Random Effects</b>					
<b>Variance Components</b>		<b>Estimate</b>		<b>ICC</b>	
Level-2 Random Intercept	School	25.30		0.053	
Level-1 Residual	Student	448.18			

**Table 51. Language Arts – Male**

<b>Fixed Effects</b>					
<b>Effect</b>	<b>Estimate</b>	<b>Standard</b>		<b>t Value</b>	<b>Pr &gt;  t </b>
		<b>Error</b>	<b>DF</b>		
Intercept	618.05	1.51	12	408.57	0.000
Treatment (S)	2.07	1.47	12	1.41	0.184
Num eligible students (S)	-0.03	0.03	12	-0.91	0.383
Yr in need of improvement (S)	-0.30	0.47	12	-0.64	0.535
Num. ELL students (S)	0.04	0.06	12	0.58	0.570
Num. Special Education students (S)	-0.09	0.05	12	-1.68	0.118
Mean score of schools (S)	-0.06	0.17	12	-0.33	0.744
English Language Learners	-3.83	3.74	331	-1.03	0.306
Special Education student	-5.49	2.42	331	-2.27	0.024
African American	-1.83	2.08	331	-0.88	0.380
Grade 8 Year 4	-2.55	2.33	331	-1.10	0.274
Baseline NJ score	9.05	1.63	331	5.55	0.000
<b>Random Effects</b>					
<b>Variance Components</b>		<b>Estimate</b>	<b>ICC</b>		
Level-2 Random Intercept	School	0.23	0.001		
Level-1 Residual	Student	386.09			

**Table 52. Language Arts – African American**

<b>Fixed Effects</b>					
<b>Effect</b>	<b>Estimate</b>	<b>Standard</b>		<b>t Value</b>	<b>Pr &gt;  t </b>
		<b>Error</b>	<b>DF</b>		
Intercept	620.00	1.09	12	570.46	0.000
Treatment (S)	2.63	1.35	12	1.95	0.074
Num eligible students (S)	0.02	0.02	12	0.77	0.455
Yr in need of improvement (S)	-0.85	0.54	12	-1.57	0.143
Num. ELL students (S)	0.11	0.06	12	1.86	0.088
Num. Special Education students (S)	-0.17	0.04	12	-4.31	0.001
Mean score of schools (S)	-0.23	0.11	12	-1.96	0.073
GENDER	-4.59	1.58	347	-2.91	0.004
Special Education student	-8.12	2.01	347	-4.03	0.000
Grade 8 Year 4	-2.05	2.00	347	-1.03	0.306
Baseline NJ score	10.00	1.25	347	8.01	0.000
<b>Random Effects</b>					
<b>Variance Components</b>		<b>Estimate</b>	<b>ICC</b>		
Level-2 Random Intercept	School	0.15	0.000		
Level-1 Residual	Student	386.74			

**Table 53. Language Arts – Hispanic**

<b>Fixed Effects</b>						
<b>Effect</b>	<b>Estimate</b>	<b>Standard</b>		<b>t Value</b>	<b>Pr &gt;  t </b>	
		<b>Error</b>	<b>DF</b>			
Intercept	624.91	3.14	8	199.21	0.000	
Treatment (S)	2.80	3.74	8	0.75	0.476	
Num eligible students (S)	-0.20	0.09	8	-2.37	0.045	
Yr in need of improvement (S)	1.13	0.86	8	1.32	0.224	
Num. ELL students (S)	0.16	0.15	8	1.05	0.324	
Num. Special Education students (S)	0.18	0.12	8	1.51	0.171	
Mean score of schools (S)	-0.48	0.26	8	-1.85	0.101	
GENDER	-5.83	2.93	255	-1.99	0.047	
English Language Learners	-3.13	3.01	255	-1.04	0.299	
Special Education student	-2.53	2.02	255	-1.25	0.211	
Grade 8 Year 4	-6.31	3.65	255	-1.73	0.085	
Baseline NJ score	9.73	2.62	255	3.71	0.000	
<b>Random Effects</b>						
<b>Variance Components</b>		<b>Estimate</b>		<b>ICC</b>		
Level-2 Random Intercept	School	39.60		0.086		
Level-1 Residual	Student	421.84				

**Table 54. Language Arts – Special Education**

<b>Fixed Effects</b>						
<b>Effect</b>	<b>Estimate</b>	<b>Standard</b>		<b>t Value</b>	<b>Pr &gt;  t </b>	
		<b>Error</b>	<b>DF</b>			
Intercept	612.37	1.69	12	362.28	0.000	
Treatment (S)	5.51	2.10	12	2.62	0.023	
Num eligible students (S)	-0.08	0.05	12	-1.42	0.182	
Yr in need of improvement (S)	0.55	0.69	12	0.80	0.441	
Num. ELL students (S)	0.16	0.08	12	2.12	0.056	
Num. Special Education students (S)	-0.04	0.07	12	-0.56	0.583	
Mean score of schools (S)	-0.08	0.23	12	-0.36	0.725	
GENDER	-4.01	1.43	270	-2.80	0.006	
English Language Learners	-7.17	3.11	270	-2.30	0.022	
African American	-4.28	2.59	270	-1.65	0.099	
Grade 8 Year 4	-4.73	1.53	270	-3.09	0.003	
Baseline NJ score	9.09	1.55	270	5.85	0.000	
<b>Random Effects</b>						
<b>Variance Components</b>		<b>Estimate</b>		<b>ICC</b>		
Level-2 Random Intercept	School	5.04		0.015		
Level-1 Residual	Student	339.97				

**B10. Analysis Group 1 – Attendance -- 1 year of treatment for 6th, 7th, & 8th graders combined**

**Table 55. Attendance – Overall**

<b>Fixed Effects</b>					
<b>Effect</b>	<b>Standard</b>				
	<b>Estimate</b>	<b>Error</b>	<b>DF</b>	<b>t Value</b>	<b>Pr &gt;  t </b>
Intercept	19.27	0.06	12	46.64	0.000
Treatment (S)	1.06	0.08	12	0.79	0.443
Num eligible students (S)	1.00	0.00	12	2.09	0.059
Yr in need of improvement (S)	1.04	0.03	12	1.32	0.212
Num. ELL students (S)	1.00	0.00	12	0.24	0.817
Num. Special Education students (S)	0.99	0.00	12	-2.37	0.036
Mean score of schools (S)	0.98	0.02	12	-0.98	0.345
<b>GENDER</b>	0.98	0.04	2282	-0.47	0.636
English Language Learners	0.70	0.05	2282	-7.17	0.000
Special Education student	0.89	0.05	2282	-2.36	0.018
African American	0.98	0.05	2282	-0.46	0.647
Grade 7 Year 1	1.17	0.06	2282	2.59	0.010
Grade 8 Year 1	1.42	0.07	2282	4.92	0.000
Grade 6 Year 2	1.14	0.08	2282	1.76	0.078
Grade 6 Year 3	0.69	0.08	2282	-4.42	0.000
Grade 6 Year 4	0.45	0.13	2282	-6.24	0.000
Baseline NJ score	0.95	0.02	2282	-2.65	0.009

**Table 56. Attendance – Female**

<b>Fixed Effects</b>					
<b>Effect</b>	<b>Estimate</b>	<b>Standard</b>		<b>t Value</b>	<b>Pr &gt;  t </b>
		<b>Error</b>	<b>DF</b>		
Intercept	18.50	0.06	12	52.19	0.000
Treatment (S)	1.10	0.10	12	0.98	0.348
Num eligible students (S)	1.01	0.00	12	3.05	0.011
Yr in need of improvement (S)	1.02	0.04	12	0.56	0.584
Num. ELL students (S)	1.00	0.00	12	-0.56	0.587
Num. Special Education students (S)	0.99	0.01	12	-2.36	0.036
Mean score of schools (S)	0.99	0.02	12	-0.68	0.508
English Language Learners	0.71	0.06	965	-6.12	0.000
Special Education student	0.88	0.09	965	-1.48	0.140
African American	1.05	0.07	965	0.67	0.505
Grade 7 Year 1	1.19	0.07	965	2.58	0.010
Grade 8 Year 1	1.62	0.08	965	5.78	0.000
Grade 6 Year 2	1.26	0.14	965	1.71	0.087
Grade 6 Year 3	0.73	0.09	965	-3.59	0.001
Grade 6 Year 4	0.48	0.10	965	-7.42	0.000
Baseline NJ score	0.97	0.03	965	-0.88	0.378

**Table 57. Attendance – Male**

<b>Fixed Effects</b>					
<b>Effect</b>	<b>Estimate</b>	<b>Standard</b>		<b>t Value</b>	<b>Pr &gt;  t </b>
		<b>Error</b>	<b>DF</b>		
Intercept	19.90	0.07	12	41.55	0.000
Treatment (S)	1.02	0.07	12	0.30	0.770
Num eligible students (S)	1.00	0.00	12	0.53	0.607
Yr in need of improvement (S)	1.05	0.03	12	2.06	0.062
Num. ELL students (S)	1.00	0.00	12	1.02	0.329
Num. Special Education students (S)	0.99	0.00	12	-1.54	0.150
Mean score of schools (S)	0.99	0.01	12	-0.96	0.356
English Language Learners	0.70	0.07	1302	-5.00	0.000
Special Education student	0.90	0.07	1302	-1.50	0.134
African American	0.94	0.06	1302	-1.02	0.307
Grade 7 Year 1	1.15	0.09	1302	1.61	0.107
Grade 8 Year 1	1.29	0.08	1302	3.28	0.001
Grade 6 Year 2	1.04	0.06	1302	0.68	0.498
Grade 6 Year 3	0.67	0.10	1302	-3.94	0.000
Grade 6 Year 4	0.44	0.16	1302	-5.22	0.000
Baseline NJ score	0.94	0.02	1302	-2.74	0.007

**Table 58. Attendance - African American**

<b>Fixed Effects</b>					
<b>Effect</b>	<b>Estimate</b>	<b>Standard</b>		<b>t Value</b>	<b>Pr &gt;  t </b>
		<b>Error</b>	<b>DF</b>		
Intercept	19.40	0.07	12	43.30	0.000
Treatment (S)	1.11	0.07	12	1.49	0.162
Num eligible students (S)	1.00	0.00	12	1.08	0.302
Yr in need of improvement (S)	1.04	0.03	12	1.54	0.149
Num. ELL students (S)	1.00	0.00	12	1.16	0.267
Num. Special Education students (S)	0.99	0.00	12	-1.65	0.124
Mean score of schools (S)	0.97	0.02	12	-1.85	0.088
GENDER	0.97	0.06	1317	-0.56	0.578
English Language Learners	0.37	0.40	1317	-2.46	0.014
Special Education student	0.87	0.05	1317	-2.74	0.007
Grade 7 Year 1	1.03	0.10	1317	0.33	0.741
Grade 8 Year 1	1.37	0.11	1317	2.91	0.004
Grade 6 Year 2	1.06	0.10	1317	0.58	0.559
Grade 6 Year 3	0.61	0.11	1317	-4.41	0.000
Grade 6 Year 4	0.43	0.16	1317	-5.16	0.000
Baseline NJ score	0.94	0.02	1317	-2.87	0.005

**Table 59. Attendance – Hispanic**

<b>Fixed Effects</b>					
<b>Effect</b>	<b>Estimate</b>	<b>Standard</b>		<b>t Value</b>	<b>Pr &gt;  t </b>
		<b>Error</b>	<b>DF</b>		
Intercept	15.76	0.10	12	27.76	0.000
Treatment (S)	1.33	0.12	12	2.30	0.040
Num eligible students (S)	1.00	0.00	12	0.48	0.639
Yr in need of improvement (S)	1.01	0.03	12	0.22	0.830
Num. ELL students (S)	1.00	0.00	12	0.97	0.351
Num. Special Education students (S)	1.00	0.00	12	-0.93	0.372
Mean score of schools (S)	1.00	0.01	12	-0.29	0.779
GENDER	0.98	0.03	909	-0.49	0.626
English Language Learners	0.73	0.06	909	-5.19	0.000
Special Education student	0.92	0.09	909	-0.84	0.402
Grade 7 Year 1	1.35	0.05	909	6.16	0.000
Grade 8 Year 1	1.47	0.09	909	4.47	0.000
Grade 6 Year 2	1.24	0.07	909	2.92	0.004
Grade 6 Year 3	0.83	0.13	909	-1.48	0.140
Grade 6 Year 4	0.48	0.12	909	-6.12	0.000
Baseline NJ score	0.97	0.03	909	-1.06	0.289

**Table 60. Attendance - Special Education**

<b>Fixed Effects</b>					
<b>Effect</b>	<b>Estimate</b>	<b>Standard</b>		<b>t Value</b>	<b>Pr &gt;  t </b>
		<b>Error</b>	<b>DF</b>		
Intercept	19.48	0.06	12	52.46	0.000
Treatment (S)	1.04	0.10	12	0.42	0.685
Num eligible students (S)	1.00	0.00	12	0.67	0.515
Yr in need of improvement (S)	1.05	0.03	12	1.58	0.139
Num. ELL students (S)	1.00	0.00	12	0.61	0.553
Num. Special Education students (S)	0.99	0.01	12	-1.18	0.262
Mean score of schools (S)	1.00	0.01	12	-0.43	0.677
<b>GENDER</b>	0.98	0.05	896	-0.36	0.720
English Language Learners	1.02	0.12	896	0.17	0.869
African American	0.98	0.07	896	-0.26	0.797
Grade 7 Year 1	0.98	0.10	896	-0.19	0.847
Grade 8 Year 1	1.22	0.07	896	2.80	0.006
Grade 6 Year 2	1.01	0.08	896	0.10	0.919
Grade 6 Year 3	0.69	0.12	896	-3.16	0.002
Grade 6 Year 4	0.31	0.21	896	-5.47	0.000
Baseline NJ score	0.94	0.02	896	-3.12	0.002

**B11. Analysis Group 2 – Comprehension -- 2 years of treatment for 7th & 8th graders combined**

**Table 61. Attendance – Overall**

<b>Fixed Effects</b>					
<b>Effect</b>	<b>Estimate</b>	<b>Standard</b>		<b>t Value</b>	<b>Pr &gt;  t </b>
		<b>Error</b>	<b>DF</b>		
Intercept	19.09	0.05	12	65.13	0.000
Treatment (S)	1.05	0.07	12	0.67	0.515
Num eligible students (S)	1.00	0.00	12	2.31	0.040
Yr in need of improvement (S)	1.03	0.02	12	1.09	0.299
Num. ELL students (S)	1.00	0.00	12	-0.61	0.552
Num. Special Education students (S)	1.00	0.00	12	-1.14	0.277
Mean score of schools (S)	0.99	0.01	12	-1.07	0.306
GENDER	1.03	0.06	1088	0.44	0.663
English Language Learners	0.88	0.07	1088	-1.85	0.065
Special Education student	0.98	0.05	1088	-0.36	0.718
African American	1.00	0.10	1088	-0.03	0.974
Grade 8 Year 2	1.17	0.07	1088	2.34	0.020
Grade 7 Year 3	0.65	0.09	1088	-4.54	0.000
Grade 7 Year 4	0.51	0.13	1088	-5.18	0.000
Baseline NJ score	0.91	0.04	1088	-2.26	0.024

**Table 62. Attendance – Female**

<b>Fixed Effects</b>					
<b>Effect</b>	<b>Estimate</b>	<b>Standard</b>		<b>t Value</b>	<b>Pr &gt;  t </b>
		<b>Error</b>	<b>DF</b>		
Intercept	17.12	0.06	12	48.25	0.000
Treatment (S)	1.24	0.07	12	3.12	0.010
Num eligible students (S)	1.01	0.00	12	5.06	0.000
Yr in need of improvement (S)	0.99	0.02	12	-0.65	0.525
Num. ELL students (S)	1.00	0.00	12	-1.40	0.187
Num. Special Education students (S)	1.00	0.00	12	-1.10	0.292
Mean score of schools (S)	0.98	0.00	12	-4.60	0.001
English Language Learners	0.87	0.09	485	-1.60	0.110
Special Education student	0.99	0.09	485	-0.11	0.915
African American	0.97	0.13	485	-0.20	0.843
Grade 8 Year 2	1.21	0.09	485	2.09	0.037
Grade 7 Year 3	0.62	0.10	485	-4.69	0.000
Grade 7 Year 4	0.58	0.21	485	-2.54	0.012
Baseline NJ score	0.96	0.03	485	-1.15	0.252

**Table 63. Attendance - Male**

<b>Fixed Effects</b>					
<b>Effect</b>	<b>Estimate</b>	<b>Standard</b>		<b>t Value</b>	<b>Pr &gt;  t </b>
		<b>Error</b>	<b>DF</b>		
Intercept	20.37	0.04	12	71.60	0.000
Treatment (S)	0.93	0.09	12	-0.78	0.452
Num eligible students (S)	1.00	0.00	12	1.06	0.312
Yr in need of improvement (S)	1.07	0.03	12	2.36	0.036
Num. ELL students (S)	1.00	0.00	12	-0.29	0.780
Num. Special Education students (S)	1.00	0.00	12	-0.73	0.481
Mean score of schools (S)	1.01	0.01	12	0.82	0.427
English Language Learners	0.96	0.13	590	-0.34	0.733
Special Education student	0.97	0.09	590	-0.36	0.716
African American	1.03	0.10	590	0.30	0.763
Grade 8 Year 2	1.12	0.11	590	1.07	0.286
Grade 7 Year 3	0.70	0.13	590	-2.72	0.007
Grade 7 Year 4	0.48	0.14	590	-5.46	0.000
Baseline NJ score	0.87	0.06	590	-2.32	0.021

**Table 64. Attendance – African American**

<b>Fixed Effects</b>					
<b>Effect</b>	<b>Estimate</b>	<b>Standard</b>		<b>t Value</b>	<b>Pr &gt;  t </b>
		<b>Error</b>	<b>DF</b>		
Intercept	20.63	0.07	12	43.35	0.000
Treatment (S)	0.96	0.10	12	-0.38	0.713
Num eligible students (S)	1.01	0.00	12	3.09	0.010
Yr in need of improvement (S)	0.99	0.04	12	-0.20	0.843
Num. ELL students (S)	0.99	0.01	12	-0.98	0.346
Num. Special Education students (S)	0.99	0.00	12	-2.43	0.032
Mean score of schools (S)	0.99	0.01	12	-0.64	0.534
GENDER	1.06	0.08	613	0.70	0.481
English Language Learners	0.63	0.15	613	-3.05	0.003
Special Education student	1.01	0.08	613	0.15	0.879
Grade 8 Year 2	1.02	0.10	613	0.24	0.811
Grade 7 Year 3	0.60	0.12	613	-4.22	0.000
Grade 7 Year 4	0.57	0.14	613	-4.08	0.000
Baseline NJ score	0.89	0.04	613	-3.23	0.002

**Table 65. Attendance – Hispanic**

<b>Fixed Effects</b>					
<b>Effect</b>	<b>Estimate</b>	<b>Standard</b>		<b>t Value</b>	<b>Pr &gt;  t </b>
		<b>Error</b>	<b>DF</b>		
Intercept	18.52	0.08	9	36.49	0.000
Treatment (S)	1.18	0.12	9	1.41	0.192
Num eligible students (S)	1.00	0.00	9	-0.74	0.479
Yr in need of improvement (S)	1.04	0.03	9	1.35	0.209
Num. ELL students (S)	1.00	0.00	9	-0.47	0.651
Num. Special Education students (S)	1.01	0.00	9	2.40	0.040
Mean score of schools (S)	0.99	0.01	9	-2.28	0.048
GENDER	0.95	0.06	437	-0.87	0.383
English Language Learners	0.93	0.08	437	-0.99	0.322
Special Education student	0.98	0.04	437	-0.46	0.647
Grade 8 Year 2	1.37	0.07	437	4.19	0.000
Grade 7 Year 3	0.67	0.11	437	-3.59	0.001
Grade 7 Year 4	0.44	0.18	437	-4.72	0.000
Baseline NJ score	0.96	0.06	437	-0.59	0.558

**Table 66. Attendance - Special Education**

<b>Fixed Effects</b>					
<b>Effect</b>	<b>Estimate</b>	<b>Standard</b>		<b>t Value</b>	<b>Pr &gt;  t </b>
		<b>Error</b>	<b>DF</b>		
Intercept	20.00	0.07	12	43.98	0.000
Treatment (S)	1.05	0.09	12	0.53	0.607
Num eligible students (S)	1.01	0.00	12	4.05	0.002
Yr in need of improvement (S)	1.02	0.03	12	0.63	0.543
Num. ELL students (S)	0.99	0.00	12	-1.40	0.188
Num. Special Education students (S)	0.99	0.00	12	-3.25	0.008
Mean score of schools (S)	1.00	0.01	12	-0.84	0.419
GENDER	1.05	0.11	445	0.44	0.663
English Language Learners	1.07	0.14	445	0.47	0.639
African American	1.04	0.14	445	0.29	0.769
Grade 8 Year 2	1.19	0.14	445	1.21	0.227
Grade 7 Year 3	0.69	0.10	445	-3.60	0.001
Grade 7 Year 4	0.47	0.13	445	-5.72	0.000
Baseline NJ score	0.92	0.07	445	-1.11	0.268

**B12. Analysis Group 3 – Comprehension -- 3 years of treatment for 8th graders**

**Table 67. Attendance – Overall**

<b>Fixed Effects</b>					
<b>Effect</b>	<b>Estimate</b>	<b>Standard</b>		<b>t Value</b>	<b>Pr &gt;  t </b>
		<b>Error</b>	<b>DF</b>		
Intercept	15.90	0.07	12	41.75	0.000
Treatment (S)	0.85	0.07	12	-2.16	0.051
Num eligible students (S)	1.01	0.00	12	4.94	0.000
Yr in need of improvement (S)	0.99	0.03	12	-0.32	0.752
Num. ELL students (S)	0.99	0.00	12	-3.55	0.004
Num. Special Education students (S)	0.99	0.00	12	-4.55	0.001
Mean score of schools (S)	1.01	0.01	12	2.03	0.065
GENDER	1.02	0.07	408	0.28	0.779
English Language Learners	0.94	0.29	408	-0.21	0.832
Special Education student	1.23	0.10	408	2.00	0.045
African American	1.14	0.11	408	1.17	0.243
Grade 8 Year 4	0.93	0.10	408	-0.74	0.463
Baseline NJ score	0.96	0.03	408	-1.33	0.183

**Table 68. Attendance – Female**

<b>Fixed Effects</b>					
<b>Effect</b>	<b>Estimate</b>	<b>Standard</b>		<b>t Value</b>	<b>Pr &gt;  t </b>
		<b>Error</b>	<b>DF</b>		
Intercept	15.36	0.06	12	49.20	0.000
Treatment (S)	0.88	0.08	12	-1.86	0.088
Num eligible students (S)	1.01	0.00	12	3.71	0.003
Yr in need of improvement (S)	1.01	0.04	12	-0.76	0.461
Num. ELL students (S)	0.99	0.00	12	-4.83	0.000
Num. Special Education students (S)	0.99	0.01	12	-3.10	0.010
Mean score of schools (S)	1.00	0.01	12	3.61	0.004
English Language Learners	1.15	0.29	199	-0.87	0.387
Special Education student	1.23	0.11	199	1.82	0.069
African American	1.08	0.15	199	1.49	0.138
Grade 8 Year 4	0.92	0.11	199	-0.03	0.974
Baseline NJ score	0.96	0.03	199	-1.51	0.133

**Table 69. Attendance – Male**

<b>Fixed Effects</b>					
<b>Effect</b>	<b>Standard</b>				
	<b>Estimate</b>	<b>Error</b>	<b>DF</b>	<b>t Value</b>	<b>Pr &gt;  t </b>
Intercept	16.45	0.09	12	31.02	0.000
Treatment (S)	0.86	0.13	12	-1.03	0.322
Num eligible students (S)	1.01	0.00	12	2.52	0.027
Yr in need of improvement (S)	0.97	0.04	12	0.29	0.779
Num. ELL students (S)	0.99	0.00	12	-1.81	0.095
Num. Special Education students (S)	0.98	0.01	12	-2.11	0.056
Mean score of schools (S)	1.03	0.01	12	0.09	0.929
English Language Learners	0.77	0.34	198	0.41	0.684
Special Education student	1.22	0.16	198	1.28	0.201
African American	1.25	0.15	198	0.53	0.599
Grade 8 Year 4	1.00	0.16	198	-0.51	0.614
Baseline NJ score	0.95	0.06	198	-0.65	0.519

**Table 70. Attendance – African American**

<b>Fixed Effects</b>					
<b>Effect</b>	<b>Standard</b>				
	<b>Estimate</b>	<b>Error</b>	<b>DF</b>	<b>t Value</b>	<b>Pr &gt;  t </b>
Intercept	19.48	0.11	12	27.79	0.000
Treatment (S)	0.76	0.14	12	-2.02	0.066
Num eligible students (S)	1.01	0.00	12	5.63	0.000
Yr in need of improvement (S)	0.91	0.06	12	-1.69	0.116
Num. ELL students (S)	0.98	0.01	12	-3.15	0.009
Num. Special Education students (S)	0.98	0.00	12	-4.19	0.001
Mean score of schools (S)	1.03	0.01	12	2.04	0.064
GENDER	1.00	0.09	211	-0.02	0.981
Special Education student	1.45	0.12	211	3.10	0.003
Grade 8 Year 4	1.26	0.13	211	1.76	0.079
Baseline NJ score	0.90	0.05	211	-2.11	0.036

**Table 71. Attendance – Hispanic**

<b>Fixed Effects</b>					
<b>Effect</b>	<b>Estimate</b>	<b>Standard</b>		<b>t Value</b>	<b>Pr &gt;  t </b>
		<b>Error</b>	<b>DF</b>		
Intercept	14.63	0.24	5	11.07	0.000
Treatment (S)	0.91	0.32	5	-0.29	0.782
Num eligible students (S)	1.00	0.01	5	0.05	0.962
Yr in need of improvement (S)	1.01	0.08	5	0.11	0.921
Num. ELL students (S)	0.98	0.01	5	-1.33	0.243
Num. Special Education students (S)	1.01	0.01	5	0.50	0.635
Mean score of schools (S)	0.98	0.01	5	-1.38	0.227
GENDER	1.04	0.04	181	1.16	0.248
English Language Learners	0.91	0.07	181	-1.46	0.145
Special Education student	1.07	0.04	181	1.47	0.142
Grade 8 Year 4	0.54	0.06	181	-10.19	0.000
Baseline NJ score	1.00	0.02	181	0.04	0.973

**Table 72. Attendance – Special Education**

<b>Fixed Effects</b>					
<b>Effect</b>	<b>Estimate</b>	<b>Standard</b>		<b>t Value</b>	<b>Pr &gt;  t </b>
		<b>Error</b>	<b>DF</b>		
Intercept	19.89	0.09	12	34.51	0.000
Treatment (S)	0.73	0.11	12	-2.91	0.014
Num eligible students (S)	1.02	0.00	12	5.66	0.000
Yr in need of improvement (S)	1.01	0.05	12	0.20	0.846
Num. ELL students (S)	0.99	0.00	12	-3.94	0.002
Num. Special Education students (S)	0.98	0.00	12	-5.05	0.000
Mean score of schools (S)	1.00	0.02	12	0.15	0.884
GENDER	1.00	0.07	159	0.02	0.983
English Language Learners	1.19	0.44	159	0.40	0.690
African American	1.42	0.17	159	2.01	0.046
Grade 8 Year 4	1.02	0.14	159	0.11	0.913
Baseline NJ score	0.92	0.05	159	-1.50	0.135

## **Appendix C**

### **Standard Deviations**



## Standard Deviations Used in Calculating Effect Sizes

**Table 73. Summary of Control Group Standard Deviations**

Analysis groups	Outcomes	Overall	Female	Male	African American	Hispanic	Special Education
1	Attendance	20.8	22.34	20.91	22.41	20.55	19.81
	Vocabulary	31.65	30.53	29.59	30.16	29.71	32.17
	Comprehension	27.98	28.19	27.56	27.86	28.2	27.36
	Language Arts	26.58	24.88	24.22	25.03	24.94	22.31
2	Attendance	22.44	21.19	23.47	22.23	23.13	23.78
	Vocabulary	27.16	26.04	28.09	26.86	27.85	26.78
	Comprehension	26.24	26.95	25.09	26.59	25.92	25.24
	Language Arts	25.66	25.96	24.44	25.01	26.49	24.8
3	Attendance	14.11	13.07	15.2	15.65	12.1	16.67
	Vocabulary	28.64	25.07	31.79	29.24	27.95	28.22
	Comprehension	24.88	23.54	26.16	26.62	22.03	25.55
	Language Arts	23.18	22.46	23.47	21.82	24.62	20.2



# **Appendix D**

## **Measures**





D2. Striving Readers RTC Visitation Log

Striving Readers RTC Visitation Log	Name: _____	Date: _____
Teacher: _____ Intervention: _____ (TI or WSI) Grade: _____ Time: _____ <input type="checkbox"/> Coaching <input type="checkbox"/> Modeling <input type="checkbox"/> Conferencing w/ Teacher <input type="checkbox"/> Conferencing w/ Literacy Coach/Administrator (circle) <input type="checkbox"/> Analysis of student work NJCU: _____ NUA: _____ <input type="checkbox"/> Grade Level/LAL Content Meeting <input type="checkbox"/> Distribution of district material <b>Fluency</b> <input type="checkbox"/> Readers' Theatre _____ Read Aloud _____ <input type="checkbox"/> Shared Reading _____ Familiar Rereading _____ Other: _____ <b>Vocabulary &amp; Word Study</b> <input type="checkbox"/> Concept Map _____ Greek/Latin Root Words _____ <input type="checkbox"/> Words for the Day _____ Word Work/Word Sorts _____ Other: _____ <b>Comprehension</b> <input type="checkbox"/> Reciprocal Teaching _____ Think Aloud _____ <input type="checkbox"/> Response Journals _____ Strategy Lesson _____ Other: _____ <b>Read 180</b> <input type="checkbox"/> Whole Group _____ Small Group Instruction _____ <input type="checkbox"/> Computer Station _____ Independent Reading _____ <input type="checkbox"/> Analyzing SAM reports to drive instruction _____ Other: _____ <b>Writing</b> <input type="checkbox"/> Writers' Workshop _____ Rubrics _____ <input type="checkbox"/> Progressive Writing Walls _____ Other: _____	Teacher: _____ Intervention: _____ (TI or WSI) Grade: _____ Time: _____ <input type="checkbox"/> Coaching <input type="checkbox"/> Modeling <input type="checkbox"/> Conferencing w/ Teacher <input type="checkbox"/> Conferencing w/ Literacy Coach/Administrator (circle) <input type="checkbox"/> Analysis of student work NJCU: _____ NUA: _____ <input type="checkbox"/> Grade Level/LAL Content Meeting <input type="checkbox"/> Distribution of district material <b>Fluency</b> <input type="checkbox"/> Readers' Theatre _____ Read Aloud _____ <input type="checkbox"/> Shared Reading _____ Familiar Rereading _____ Other: _____ <b>Vocabulary &amp; Word Study</b> <input type="checkbox"/> Concept Map _____ Greek/Latin Root Words _____ <input type="checkbox"/> Words for the Day _____ Word Work/Word Sorts _____ Other: _____ <b>Comprehension</b> <input type="checkbox"/> Reciprocal Teaching _____ Think Aloud _____ <input type="checkbox"/> Response Journals _____ Strategy Lesson _____ Other: _____ <b>Read 180</b> <input type="checkbox"/> Whole Group _____ Small Group Instruction _____ <input type="checkbox"/> Computer Station _____ Independent Reading _____ <input type="checkbox"/> Analyzing SAM reports to drive instruction _____ Other: _____ <b>Writing</b> <input type="checkbox"/> Writers' Workshop _____ Rubrics _____ <input type="checkbox"/> Progressive Writing Walls _____ Other: _____	Teacher: _____ Intervention: _____ (TI or WSI) Grade: _____ Time: _____ <input type="checkbox"/> Coaching <input type="checkbox"/> Modeling <input type="checkbox"/> Conferencing w/ Teacher <input type="checkbox"/> Conferencing w/ Literacy Coach/Administrator (circle) <input type="checkbox"/> Analysis of student work NJCU: _____ NUA: _____ <input type="checkbox"/> Grade Level/LAL Content Meeting <input type="checkbox"/> Distribution of district material <b>Fluency</b> <input type="checkbox"/> Readers' Theatre _____ Read Aloud _____ <input type="checkbox"/> Shared Reading _____ Familiar Rereading _____ Other: _____ <b>Vocabulary &amp; Word Study</b> <input type="checkbox"/> Concept Map _____ Greek/Latin Root Words _____ <input type="checkbox"/> Words for the Day _____ Word Work/Word Sorts _____ Other: _____ <b>Comprehension</b> <input type="checkbox"/> Reciprocal Teaching _____ Think Aloud _____ <input type="checkbox"/> Response Journals _____ Strategy Lesson _____ Other: _____ <b>Read 180</b> <input type="checkbox"/> Whole Group _____ Small Group Instruction _____ <input type="checkbox"/> Computer Station _____ Independent Reading _____ <input type="checkbox"/> Analyzing SAM reports to drive instruction _____ Other: _____ <b>Writing</b> <input type="checkbox"/> Writers' Workshop _____ Rubrics _____ <input type="checkbox"/> Progressive Writing Walls _____ Other: _____
Comments: _____ _____ _____ _____ _____		

School Name: \_\_\_\_\_ SY 2008-2009



D3. Striving Readers Observation Tool



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## Striving Readers: Newark

### CLASSROOM OBSERVATION PROTOCOL

Spring 2007

Observer name \_\_\_\_\_ Date of  
observation \_\_\_\_\_

School: \_\_\_\_\_ Obs. Start Time \_\_\_\_\_ End  
Time: \_\_\_\_\_

Teacher name: \_\_\_\_\_ Teacher gender: Female Male

Grade you are observing 6<sup>th</sup> 7<sup>th</sup> 8<sup>th</sup> combination

Adult present in the room *besides* the classroom teacher? Yes No

Role of this adult (e.g., student  
teacher/paraprofessional) \_\_\_\_\_

# students in class 10 minutes into the observation: \_\_\_\_\_ [# females: \_\_\_\_\_ #  
males \_\_\_\_\_]

*(please check to ensure that #females + #males sum to the total number of students)*



**IV. Time Sampled Data** (Begin 1<sup>st</sup> row ten minutes after the official start time of class and then complete every 10 minutes)

D-6

Time	% of student s engaged in task	Student Grouping <i>(refers to how students are working, not how seating is arranged)</i>	Instructional Codes <i>(Add a code of "T" if teacher is providing direct instruction or modeling; Add "S" if students are applying strategies on their own or with one another; Use both "T" and "S" if applicable)</i>				
			<u>Vocabulary</u>	<u>Fluency</u>	<u>Comprehension</u>	<u>Writing</u>	<u>Other Activity</u>
1: _____	<25% <input type="checkbox"/> 25-50% <input type="checkbox"/> 51-75% <input type="checkbox"/> >75% <input type="checkbox"/>	Whole class <input type="checkbox"/> Pairs <input type="checkbox"/> Small group <input type="checkbox"/> Individual <input type="checkbox"/>	<u>Vocabulary</u>	<u>Fluency</u>	<u>Comprehension</u>	<u>Writing</u>	<u>Other Activity</u>
2: _____	<25% <input type="checkbox"/> 25-50% <input type="checkbox"/> 51-75% <input type="checkbox"/> >75% <input type="checkbox"/>	Whole class <input type="checkbox"/> Pairs <input type="checkbox"/> Small group <input type="checkbox"/> Individual <input type="checkbox"/>	<u>Vocabulary</u>	<u>Fluency</u>	<u>Comprehension</u>	<u>Writing</u>	<u>Other Activity</u>
3: _____	<25% <input type="checkbox"/> 25-50% <input type="checkbox"/> 51-75% <input type="checkbox"/> >75% <input type="checkbox"/>	Whole class <input type="checkbox"/> Pairs <input type="checkbox"/> Small group <input type="checkbox"/> Individual <input type="checkbox"/>	<u>Vocabulary</u>	<u>Fluency</u>	<u>Comprehension</u>	<u>Writing</u>	<u>Other Activity</u>
4: _____	<25% <input type="checkbox"/> 25-50% <input type="checkbox"/> 51-75% <input type="checkbox"/> >75% <input type="checkbox"/>	Whole class <input type="checkbox"/> Pairs <input type="checkbox"/> Small group <input type="checkbox"/> Individual <input type="checkbox"/>	<u>Vocabulary</u>	<u>Fluency</u>	<u>Comprehension</u>	<u>Writing</u>	<u>Other Activity</u>
5: _____	<25% <input type="checkbox"/> 25-50% <input type="checkbox"/> 51-75% <input type="checkbox"/> >75% <input type="checkbox"/>	Whole class <input type="checkbox"/> Pairs <input type="checkbox"/> Small group <input type="checkbox"/> Individual <input type="checkbox"/>	<u>Vocabulary</u>	<u>Fluency</u>	<u>Comprehension</u>	<u>Writing</u>	<u>Other Activity</u>
6: _____	<25% <input type="checkbox"/> 25-50% <input type="checkbox"/> 51-75% <input type="checkbox"/> >75% <input type="checkbox"/>	Whole class <input type="checkbox"/> Pairs <input type="checkbox"/> Small group <input type="checkbox"/> Individual <input type="checkbox"/>	<u>Vocabulary</u>	<u>Fluency</u>	<u>Comprehension</u>	<u>Writing</u>	<u>Other Activity</u>
7: _____	<25% <input type="checkbox"/> 25-50% <input type="checkbox"/> 51-75% <input type="checkbox"/> >75% <input type="checkbox"/>	Whole class <input type="checkbox"/> Pairs <input type="checkbox"/> Small group <input type="checkbox"/> Individual <input type="checkbox"/>	<u>Vocabulary</u>	<u>Fluency</u>	<u>Comprehension</u>	<u>Writing</u>	<u>Other Activity</u>
8: _____	<25% <input type="checkbox"/> 25-50% <input type="checkbox"/> 51-75% <input type="checkbox"/> >75% <input type="checkbox"/>	Whole class <input type="checkbox"/> Pairs <input type="checkbox"/> Small group <input type="checkbox"/> Individual <input type="checkbox"/>	<u>Vocabulary</u>	<u>Fluency</u>	<u>Comprehension</u>	<u>Writing</u>	<u>Other Activity</u>
9: _____	<25% <input type="checkbox"/> 25-50% <input type="checkbox"/> 51-75% <input type="checkbox"/> >75% <input type="checkbox"/>	Whole class <input type="checkbox"/> Pairs <input type="checkbox"/> Small group <input type="checkbox"/> Individual <input type="checkbox"/>	<u>Vocabulary</u>	<u>Fluency</u>	<u>Comprehension</u>	<u>Writing</u>	<u>Other Activity</u>

**Instruction codes**

<b>Vocabulary</b> <i>Focus is on vocabulary development.</i>		<b>Fluency</b> <i>Focus is on improving reading fluency</i>		<b>Comprehension</b> <i>Focus is on improving student reading comprehension.</i>		<b>Writing</b> <i>Students writing, or writing instruction is happening.</i>		<b>Other Activity</b> <i>Describes other activities</i>	
<b>Code</b>	<b>Definition</b>	<b>Code</b>	<b>Definition</b>	<b>Code</b>	<b>Definition</b>	<b>Code</b>	<b>Definition</b>	<b>Code</b>	<b>Definition</b>
T-CC	<u>Context Clue</u> : Teacher directs students to look in rest of text to infer meaning of a word. Can inc. reading rest of the sentence and guessing what makes sense, or look at accompanying picture.	S-CR	<u>Choral Reading</u> : Groups of students read in unison. Passage may be read multiple times. Teacher may read along.	T-GO S-GO	<u>Graphic Organizer</u> : Teacher or students complete a pictorial representation of how ideas in text are connected and organized.	T-CW S-CW	<u>Collaborative Writing</u> : teachers and/or students work together to create stories, w teacher/student as the scribe	ADM	<u>Administration</u> : Teacher engaged in administrative tasks, such as grading papers
S-DIC	<u>Dictionary use</u> : Students look up unfamiliar words. Includes glossary provided by teacher, glossary in their textbook, a separate dictionary, or online dictionary.	S-PR	<u>Paired Reading</u> : Pairs of students take turns reading out loud.	S-KWL	<u>K-W-L</u> : “What I know, what I want to find out, what I learned.” 3-column chart. Fill out K and W <i>before</i> reading and L <i>after</i> reading.	T-GW	<u>Guided Writing</u> : Teachers guide writing process through mini-lessons & conferences. Sometimes called writer’s workshop	ASS S-COM	<u>Assessment</u> : Teacher and students engaged in testing <u>Computer</u> : Computer use for research, writing or instruction
T-E	<u>Etymology</u> : Teacher discusses the history or origin of a word. Can involve identifying prefixes and suffixes.	S-RR	<u>Repeated oral Reading</u> : Same passage read aloud multiple times (by teacher and/or students) while others follow along.	T-MU	<u>Monitoring Understanding</u> : Teacher monitors by asking specific questions & encouraging students to monitor own understanding. May do this through a think aloud (add TA code). Does not inc. general questions, like “are there are any questions?”	S-JU	<u>Journal Use</u> : Students write in journals/blogs. A journal is usually in a separate notebook	S-COP	<u>Cooperative</u> : Students are working collaboratively in groups to discuss text. May inc. pair reading, reciprocal teaching, or other structured protocols around reading or discussing text. Peer or group editing add “W” to code/
T-GO	<u>Graphic Organizer</u> : Pictorial representation of how ideas in a text are connected & organized.	S-LI	<u>Listening to Text</u> : Students read along in a book while listening to the text.	T-MC S-MC	<u>Making Connections</u> : Teacher or students relate text to current events or to material already covered. T may do this through a think aloud (add TA code).	S-NT	<u>Note Taking</u> : Students are taking notes. If they are copying notes add – X to code	T-DIS	<u>Discussion</u> : Teacher is leading or moderating a class discussion. There is student to student interaction. Otherwise use LEC
T-PT	<u>Pre-teaching</u> : Discuss meaning of words <i>before</i> read text. Can involve discussing word & activating prior knowledge.	O-F	<u>Other Fluency</u> : Specify	S-P	<u>Predictions</u> : Students make predictions before, and at specified points during reading.	S-WP	<u>Writing Process</u> : Students work on planning, writing, revising or editing their text. Long term project	T-LEC	<u>Lecture</u> : Teacher talks most of the time. Students respond briefly to questions. Almost no student to student talk
T-WW S-WW	<u>Word Wall</u> : List of words related to unit posted on the wall & easily visible. Use of the word wall would inc adding new words, using words on wall to complete a task, or overtly referring to posted words			S-SM	<u>Summarizing</u> : <i>After</i> reading students use one of a number of strategies to create a summary.	S-QR	<u>Question Response</u> : Students respond to questions or prompts in writing – could be questions at the end of a text, from teacher, or on workbooks.	T-MOD T-TA	<u>Modeling</u> : Teacher demonstrates / models how to analyze a word, answer a question. <u>Think Aloud</u> : Teacher describes their thought process to model how a strategy is used. Literally walks students through their personal thought process.
O-V	<u>Other Vocabulary</u> : Specify			T-TX	<u>Text Structure</u> : Explicitly teaching expository text structure. May inc how text is organized, id words in bold, & recognize signal words (eg “therefore”). T may do this through a think aloud (add TA code).	S-QW	<u>Quick Writing</u> : Meant to elicit connection or response to reading.	TRAN	Transition: No instruction is taking place because students are transitioning from one activity to another
				O-C	<u>Other Comprehension</u> : Specify	O-W	<u>Other Writing</u> : Specify	OTH	<u>Other</u> : Specify

## VI. Student Questions

1. Ask a students if this was a typical class (if no, also ask for an example of how it was atypical). Record response here:

Student:

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Student gender: Male  Female

D4. Westat Fidelity Measure



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# Striving Readers: Newark

## FIDELITY PROTOCOL

Spring 2007

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Observer name \_\_\_\_\_ Date of observation \_\_\_\_\_

School: \_\_\_\_\_ Lesson Start Time \_\_\_\_\_ End Time: \_\_\_\_\_

Teacher name: \_\_\_\_\_ Teacher gender: Female Male

Grade you are observing 6<sup>th</sup> 7<sup>th</sup> 8<sup>th</sup> Mixed

# students in class 10 minutes into the observation: \_\_\_\_\_ [# girls: \_\_\_\_\_ # boys \_\_\_\_\_]

# of students tardy: \_\_\_\_\_

For how long did this READ 180 section meet today?  < hour  60 – 89 min  90-95 min  96 min+

## I. Classroom Organization, Materials, and Equipment

	Yes	No	NA
1. Room had a space designated for independent reading	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
1a. Independent reading area has comfortable seating	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
1b. Independent reading area has sufficient working cd players	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
1c. Independent reading area has adequate paperback books	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2. Room had a space designated for small group instruction	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3. Room had a space designated for whole group instruction.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
4. Room had a space containing computer workstations.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
4a. There are at least five functioning computer workstations	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
5. There is enough space for students to move easily between stations	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
5. Room has a paperback library with books labeled by level	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
6. Expectations for student performance & behavior are posted	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

## II. Instruction

**Whole-Group Instruction Start time:** \_\_\_\_\_ **End time** \_\_\_\_\_

1. Do the instructional activities involve a READ 180 rBook?

Yes     No

1b. What color is the cover of the rBook?

Blue     Green

2. Do all students have an rBook?

Yes     Some of them have rBooks     No

3. Are students using their rBooks for writing responses to the teacher's questions and prompts?

Yes     Some of them are using rBooks     No

4. Do the students work with any materials other than READ 180?

Yes     No



If yes, briefly describe the materials below: *(remember to ask teacher question 4 at the end of class)*

5. Does the teacher attempt to engage all students in the instructional activities by asking questions, providing prompts, and soliciting responses?

Yes  Teacher attempts to engage some students  No

6. Does the teacher make explicit connections between the Whole-Group learning activities and the content or focus of the Small-Group instruction that will follow the Whole Group session?

Yes  No

**Small-Group Instruction Start time:** \_\_\_\_\_ **End time** \_\_\_\_\_

1. Do the instructional activities involve a READ 180 rBook?

Yes  No

2. Do all students have an rBook?

Yes  Some of them have rBooks  No

3. Are students using their rBooks for writing responses to the teacher's questions and prompts?

Yes  Some of them are using rBooks  No

4. Do the students work with any materials other than READ 180?

Yes  No

If yes, briefly describe the materials below: *(remember to ask teacher question 4 at the end of class)*

5. Does the teacher attempt to engage all of the students in the small-group instructional activities by asking questions, providing prompts, and soliciting responses?

Yes  teacher attempts to engage some students  No

6. Does the teacher provide explicit feedback on student work and their participation in small-group learning activities?

Yes  teacher provides feedback to some students  No

7. Does the teacher make explicit connections between the Small-Group learning activities and those included in the earlier Whole-Group session?

Yes  No

**Independent Reading Start time:** \_\_\_\_\_ **End time** \_\_\_\_\_

1. Do students using the Audiobooks appear to be listening and following along with the text?

Yes  Some  No  No, because students are not using Audiobooks

2. Are students writing in reading logs or journals?

Yes  Some are writing in logs or journals  No

**Computer Rotation Start time:** \_\_\_\_\_ **End time** \_\_\_\_\_

1. Do the students appear to be on task?

Yes  Some are on task  No

2. Do any of the students appear to be having trouble using the computers?

Yes, some are having trouble  No

If students have trouble, do they receive help quickly?

Yes  No

**Whole-Group Wrap-Up Start time:** \_\_\_\_\_ **End time** \_\_\_\_\_

1. Does the teacher review key points from the lesson?

Yes  No

2. Do students reflect on literacy or learning experiences?

Yes  No

### III. Classroom Management

*Based on the entire observation of the READ 180 class, answer the following questions.*

1. Are expectations for rotations, student work, and behavior clear and explicit?  
 Yes, as indicated by clear directions from the teacher  
 Yes, as indicated by displays that are posted on classroom walls and elsewhere  
 No
2. Is there disruptive behavior that interrupts the classroom instruction and student movement from one rotation to the next?  
 Yes     No

### IV Teacher Questions

1. Were any students absent today? If so, how many students?
2. Are all of the students listed in SAM?
3. How often do students take the SRI?
4. (ONLY ASK IF MATERIALS OTHER THAN RBOOK WERE USED IN WHOLE GROUP OR SMALL GROUP SESSION) I noticed that you used some materials that were not READ 180 in whole group/small group. Why is that?
5. Was today a typical lesson? Did I observe anything that was unusual for your class?



## **Appendix E**

### **Whole School Student Impact Table**



**Table 74. Whole school impact analyses**

<b>Fixed Effects</b>					
<b>Effect</b>	<b>Standard</b>		<b>DF</b>	<b>t Value</b>	<b>Pr &gt;  t </b>
	<b>Estimate</b>	<b>Error</b>			
Intercept	231.7	10.52	30	22.01	<0.0001
Male	-0.096	0.18	85	-0.54	0.59
African-American	-0.27	0.98	85	-3.52	0.0007
Hispanic	-0.16	0.09	85	1.68	0.09
Special Education	-0.30	0.22	85	-1.37	0.17
Treatment (Baseline)	0.56	3.42	85	0.15	0.916
Uniform Changes, Year 1	-11.4	2.11	85	-5.43	<0.001
Treatment Effect in Year 1	--3.4	3.01	85	-1.12	0.27
Uniform Changes, Year 2	-11.8	2.20	85	-5.36	<0.001
Treatment Effect in Year 2	-3.6	3.07	85	-1.16	0.25
Uniform Changes Year 3	-1.8	2.14	85	-0.86	0.39
Treatment Effect in Year 3	-1.8	3.04	85	-0.58	0.56
Intercept	231.7	10.52	30	22.01	<0.0001