Evaluation & Research Department

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Impact Evaluation

OUTCOMES FOR SUPPLEMENTAL EDUCATION SERVICES (SES): 2009-10

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This report is the third of three reports examining SES within the Wake County Public School System (WCPSS). The first report, Supplemental Education Services: 2008-09 & 2009-10, provided a description of SES within WCPSS in terms of the schools, providers, and student participants in 2008-09 and 2009-10 (Paeplow & Baenen, 2011). The second SES report, Implementation of Supplemental Education Services: 2009-10, examined the implementation of SES within WCPSS in 2009-10 (Paeplow, 2011). This report will focus on the long-term goal of improved student achievement by the end of the school year.

Title I schools that have not made Adequate Yearly Progress (AYP) for three years enter into their second year of school improvement and are required to offer eligible students (i.e., economically disadvantaged students who receive free or reduced-price lunch [FRL]) SES in addition to existing Title I services. For additional information on AYP see ABCs and AYP results, WCPSS: 2009-10 (Haynie, 2011).

Supplemental Education Services are designed to provide FRL students opportunities for academic instruction in addition to the instruction received during the school day. By offering FRL students additional opportunities for academic support, SES recognizes the economic constraints that may restrict these students from accessing extra learning opportunities in the same manner as students from more affluent families. Federal Title I legislation under the Title I, Part A of the Elementary and Secondary Education Act of 1965 as amended by the No Child Left Behind Act of 2001 (NCLB), focuses on improving the academic achievement of disadvantaged students; thus, students who receive FRL are eligible for SES regardless of their achievement level (DPI, 2008).

Major Findings

Student Characteristics: In 2009-10, 508 students participated in SES at the five schools offering SES: Brentwood, Fox Road, Poe, Wendell, and York. The vast majority of students (83%) participating in SES received tutoring services in both reading and mathematics.

Implementation: Based on the prior two SES studies, SES was compliant with federal guidelines and services were implemented with fidelity with minor areas for improvement.

Impact: Overall, this study did not support the value of SES in promoting higher achievement (beyond what matched students achieved).

- **Proficiency:** The percentage of SES participants proficient in reading and mathematics in grades 4 and 5 and reading in grades 1 and 2 increased following services. However, participation in SES generally did not improve students' academic achievement beyond that achieved by matched students except in grade 2 reading.
- **Growth:** Considerable increases were evident between 2008-09 and 2009-10 in the percentage of SES students meeting state growth targets. The percentage of students meeting growth targets was greater than for all other reference groups in mathematics in 2009-10. However, growth results were statistically similar to the matched group.

Recommendations: All vendors should consider ways to strengthen their services. WCPSS staff should work with North Carolina's Department of Public Instruction staff to determine if adjustments to current SES requirements are warranted. School Site Coordinators should consistently share information with classroom teachers, and communication between providers and classroom teachers should increase.

Impact Evaluation reports provide basic evaluative outcome information on standard indicators.

WAKE COUNTY PUBLIC SCHOOL SYSTEM

The author acknowledges the contribution of Nancy Baenen to this report.

SES is designed to improve student achievement by providing additional academic support to FRL students. In order to assess the success of this initiative, the long-term goals for 2009-10 were examined:

- A higher percentage of SES students scoring proficient on reading and mathematics End-of-Grade exams (EOGs) than the prior year before receiving SES.
- A higher percentage of SES participants meeting reading and mathematics growth targets (academic change) than prior year before receiving SES (grades 4 and 5).
- All subgroups meeting reading and mathematics growth targets (academic change) on EOG.

Short-term and intermediate goals were set to improve the likelihood of reaching the long-term goal of improved student achievement (by the end of the year in which services were received). The first and second SES reports in this series examined the degree to which requirements were satisfied and short-term and intermediate goals were met. The first SES report, Supplemental Education Services: 2008-09 & 2009-10, found that the SES programs for WCPSS in 2008-09 and 2009-10 were in compliance with federal guidelines to make available an SES program, enroll only FRL students, and to use state-approved vendors to deliver the program (Paeplow & Baenen, 2011). The second SES report, Implementation of Supplemental Education Services: 2009-10, which examined the implementation of SES within WCPSS in 2009-10, found overall the SES program was largely implemented with fidelity (Paeplow, 2011). Indeed, most of the Local Education Agency (LEA), provider, and parent requirements were met, with some areas for refinement related to communication and monitoring. This report will examine whether SES has improved student achievement and thereby met its long-term goal.

STUDY DESIGN

Student outcomes for schools offering SES in 2009-10 were examined and a comparison group of matched students was constructed from Title I schools not offering SES. The three key questions of interest in this evaluation were:

- Has SES been effective in terms of outcomes for students (compared to students not served, FRL students not served, and the district overall)?
- How did the students in the program progress compared to matched students?
- How did the students in the program progress by NCLB subgroups?

MATCHED SCHOOLS

The five elementary schools that offered SES in 2009-10 were included in the study: Brentwood, Fox Road, Poe, Wendell, and York. Cluster analysis was conducted to select five Title I elementary schools from which to select a one-to-one matched group of students for comparison

to SES served students. The analysis was run using the centroid method:[1] three variables were included in the model (2008-09 performance composite, 2008-09 overall risk score, and 2008-09 days in membership on the 20th day of school). The overall risk score is a school level score calculated based on the percentage of students at each school with academic risk factors, such as FRL status, limited English proficiency (LEP) status, and students with disabilities (SWD).

Table 1
Schools Offering SES and Matched Title I Elementary Schools

SES School	Matched School
Brentwood	Creech Road
Fox Road	Barwell Road
Poe	Smith
Wendell	Conn
York	Powell

Data Source: 2008-09 Healthy Schools Indicators for Elementary Schools

STUDY PARTICIPANTS

The students who either attended one of the five schools offering SES or one of the five comparison schools in 2009-10 were included in this study. In 2009-10, 508 students participated in SES at one of the five schools offering SES. The vast majority (83%) of students participating in SES received tutoring services in both reading and mathematics. All students participating in SES were FRL as required; thus, a matched group of students was selected from the 1,678 FRL students attending one of the matched schools in 2009-10.

MATCHED STUDENTS

A one-to-one matched group of students was generated from schools offering SES and matched comparison schools. The one-to-one matching process between students participating in SES and FRL students attending a comparison school was run twice: once utilizing reading pre-scores and once utilizing mathematics pre-scores. Students were matched on grade level, their prior reading or mathematics performance, and several demographic characteristics—FRL, LEP, and SWD status. Students in kindergarten were not included in the reading or mathematics match process due to a lack of prior scores. For students in grades 4 and 5 their prior year's score was their EOG score (+ or – three points or within the standard error of measurement for reading and mathematics[2]). For students in grades 1, 2, and 3 the prior year's mathematics score was based on the number of mathematics strands (algebra, number sense, geometry, data and analysis, and

[1] "*Centroid method*. The cluster to be merged is the one with the smallest sum of distances between cluster means (centroids) for all variables. The centroid method also weights for differences in cluster size" (Garson, 2010, p.8).
[2] With large-scale tests like the EOGs there is always some portion of the student's score that can be attributed to unknown factors. The standard error of measurement provides an estimate for this unknown portion (Holdzkom, Sumner, & McMillen, 2010). The standard error of measurement for Spring 2007 to Spring 2010 was three in reading and four in mathematics for the grade 3 EOGs and three for reading and mathematics for the grade 4 EOGs.

measurement) in which they were proficient (i.e. scored level 3 or 4). For grades 1, 2, and 3 the reading prior year's score was based on book level proficiency for the end of the prior grade level[3].

Of the 508 students included in the overall study, 463 received services in reading and 458 received services in mathematics (most students received services in both subjects). SES participants were matched to FRL students attending the five Title I schools selected as comparisons; 367 of the 463 students served in reading and 389 of the 458 students served in mathematics had pre-scores available for matching. Thus, of the 367 students served in reading with available data, 211 were matched one-to-one based on grade level, reading pre-scores, and demographic characteristics; and of the 389 students served in mathematics with available data, 214 were matched based on grade level, mathematics pre-scores, and demographic characteristics.

The comparative analyses on the 422 one-to-one matched students for reading (211 SES students and 211 matched comparison students) and the 428 one-to-one matched students for mathematics (214 SES students and 214 matched comparison students) were conducted to verify the study's findings. The one-to-one matched student comparisons were used to verify significant or notable findings.

PROGRAM COSTS

NCLB requires joint funding for the provision of school choice and SES in an amount equal to 20% of its Title I, Part A allocation. Thus, as required by NCLB, in 2009-10 WCPSS set aside 20% or $4,138,186.80 of the $20,690,934 received in Title I funding for the provision of school choice and SES.

In 2009-10, $633,357.35 of the $4,138,186.80 set aside for the provision of school choice and SES was paid to SES providers. This amount funded tutoring services for 508 students attending one of the five Title I schools required to offer SES in 2009-10, at a cost of approximately $1,247 per student. The maximum per pupil allocation for SES in 2009-10 was $1,422.[4] Based on a total of 13,330 hours of tutoring received in 2009-10, the approximate cost was $47.50 an hour for the small group tutoring. Table 2 displays the 2009-10 SES expenditures by each of the provider agencies.

[3] Book Levels and mathematics strands are not based on standardized instruments; thus, they are less reliable than EOG assessments given to students in grades 3-5. Indeed, concerns about the reliability of the running records assessment in which the book level is derived have been raised locally and nationally (Blaiklock, 2003).

[4] In 2009-10, the per pupil cap was $1,422. "An LEA must calculate the per-pupil cap on SES costs by dividing its Title I, Part A allocation by the number of children residing within the LEA aged 5-17 who are from families below the poverty level, as determined by the most recent census estimates from the Department of Commerce" (U.S. Department of Education, 2009, p. 48).

Although $989,712 was set aside for the provision of SES, $633,357.35 was actually paid to SES providers. The difference is due to attendance rates since providers were paid based on actual tutoring hours provided. The largest expense in 2009-10 was paid to Sylvan Learning Center, the largest SES provider who served 155 or 30.5% of SES participants.

Table 2
2009-2010 SES Contractual Services

Vendor	Amount Ordered	Amount Billed
Academic Achievers/S&L Consultants	$98,118.00	$75,389.70
Academics Plus, Inc.	$118,026.00	$103,450.50
Accelerated Achievement/ Measurement Incorporated	$98,118.00	$70,886.70
Achieve Success Tutoring by University Instructors	$28,440.00	$15,642.00
AIM by Salient Learning	$28,440.00	$11,020.50
Allied Academics	$28,440.00	$11,542.50
ATS Project Success	$21,330.00	$4,266.00
Capital Educational Supp.	$21,330.00	-
It's Simply English	$21,330.00	$3,981.60
Learning & You Contractors, LLC	$65,412.00	$44,486.60
Master Mind Prep Learning Solutions, Inc.	$21,330.00	$9,024.00
Shaw University/Historically Minority Colleges & Univ. Consortium of NC	$76,788.00	$61,123.50
Sterling Learning Center, Inc.	$21,330.00	$5,092.50
Sylvan Learning Center / Ace It	$319,950.00	$200,387.25
Village Learning Solutions	$21,330.00	$17,064.00
Total	**$989,712.00**	**$633,357.35**

Data Source: Oracle report provided by WCPSS' State and Federal Programs staff.

STUDENT CHARACTERISTICS

SES PARTICIPANTS' DEMOGRAPHICS

Table 3 displays the demographic characteristics of the students participating in one of the five schools offering SES in 2009-10. Per the federal requirement, all 508 students participating in SES were FRL.

Among SES participants several subgroups of students were disproportionately represented.

- LEP students represented 39.2% of served students compared to 12.2% in the district.
- Black/African American students represented 47.0% versus 23.7% of WCPSS students.
- Hispanic/Latino students represented 39.2% versus 13.9% of WCPSS students.

Table 3
Characteristics of Students Participating in SES
2009-10

	Students Participating in SES		WCPSS Elementary Students	
	Number	**Percent**	**Number**	**Percent**
FRL	508	100.0%	22,966	33.9%
SWD	69	13.6%	7,888	11.6%
LEP	199	39.2%	8,253	12.2%
Male	259	51.0%	34,417	50.8%
Female	249	49.0%	33,331	49.2%
American Indian	0	0.0%	172	0.3%
Asian	11	2.2%	4,426	6.5%
Black/African Am.	239	47.0%	16,050	23.7%
Hispanic/Latino	199	39.2%	9,393	13.9%
Multiracial	23	4.5%	3,723	5.5%
White	36	7.1%	33,984	50.2%
Total	**508**	**100%**	67,748	**100%**

Note: Students will appear in more than one category: race and gender, FRL, SWD, and/or LEP.
Data Source: 2009-10 End-of-Year Elementary School Student Rosters and WCPSS Demographics: School Statistics and Maps, 2009-10 at http://www.wcpss.net/demographics/reports/book09a.pdf
Interpretation Example: Of the 508 students participating in SES 69 (13.6%) were SWD students.

READING MATCHED GROUP DEMOGRAPHICS

The one-to-one matched subgroups of students drawn from the study cohorts for reading and mathematics are depicted in Tables 4 and 5 respectively. While Table 3 displays the demographic characteristics of all students participating in SES in 2009-10, the matched reading and mathematics subgroups represent *only* SES participants and the comparison students that were matched one-to-one. Thus, while an individual SES student will be in the total group, he or she may or may not be in the reading and/or mathematics subgroups.

Of the 508 students participating in SES in 2009-10, 367 were served in reading and had pre-scores available for matching; 211 of these students were matched on their grade level, prior reading performance and several demographic characteristics—FRL, LEP, and SWD status—to students attending a matched school. Table 4 shows the demographic characteristics of the 211 SES students and the one-to-one matched group of students. The SES and comparison student groups have exact representation for each of the matched variables. While students were not matched on gender or race, the distribution of these characteristics is very similar between these two student groups.

Table 4
Characteristics of Reading Matched Students
in SES and Matched Students

	SES		Matched Students	
	Number	**Percent**	**Number**	**Percent**
FRL	211	100.0%	211	100.0%
SWD	23	10.9%	23	10.9%
LEP	90	42.7%	90	42.7%
Male	100	47.4%	106	50.2%
Female	111	52.6%	105	49.8%
American Indian	0	0.0%	0	0.0%
Asian	6	2.8%	2	0.9%
Black/African Am.	98	46.4%	100	47.4%
Hispanic/Latino	85	40.3%	92	43.6%
Multiracial	11	5.2%	7	3.3%
White	11	5.2%	10	4.7%
Total	**211**	**100%**	**211**	**100%**

Note: 1. Students will appear in more than one category: race and gender, FRL, SWD, and/or LEP.
2. Kindergarten students are not included in this table due to a lack of pre-scores for matching.

Data Source: 2009-10 End-of-Year Elementary School Student Rosters

Interpretation Example: Of the 211 students participating in SES matched one-to-one with a comparison student based on reading pre-score, FRL, SWD, and LEP status, 23 (10.9%) were SWD students.

MATHEMATICS MATCHED GROUP DEMOGRAPHICS

Two hundred and fourteen of the 389 students receiving SES services in mathematics in 2009-10 with available pre-scores were matched on their grade level, prior mathematics performance, and several demographic characteristics—FRL, LEP, and SWD status—to students attending a matched school. Table 5 shows the demographic characteristics of the 214 SES students and the one-to-one matched group of students. While SES and comparison student groups have exact representation on matched variables, they also had similar racial and gender distributions.

Table 5
Characteristics of Mathematics Matched Students in SES and Comparison Group

	SES		Comparison Students	
	Number	**Percent**	**Number**	**Percent**
FRL	214	100.0%	214	100.0%
SWD	28	13.1%	28	13.1%
LEP	86	40.2%	86	40.2%
Male	102	47.7%	106	49.5%
Female	112	52.3%	108	50.5%
American Indian	0	0.0%	0	0.0%
Asian	6	2.8%	4	1.9%
Black/African Am.	100	46.7%	92	43.0%
Hispanic/Latino	89	41.6%	90	42.1%
Multiracial	6	2.8%	9	4.2%
White	13	6.1%	19	8.9%
Total	**214**	**100%**	**214**	**100%**

Note: 1. Students will appear in more than one category: race and gender, FRL, SWD, and/or LEP.
2. Kindergarten students are not included in this table due to a lack of pre-scores for matching.

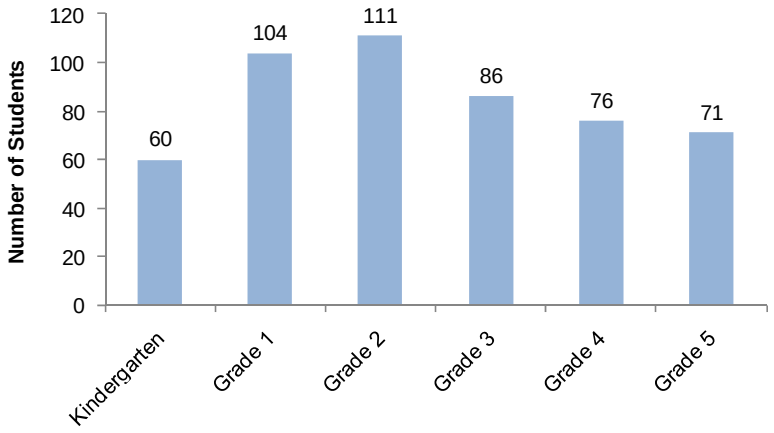
Data Source: 2009-10 End-of-Year Elementary School Student Rosters

Interpretation Example: Of the 214 students participating in SES matched one-to-one with a comparison student based on mathematics pre-score, FRL, SWD, and LEP status, 28 (13.1%) were SWD students.

SES PARTICIPANTS' GRADE LEVEL

Figure 1 depicts students participating in SES in 2009-10 by grade level. While students from each grade level (K-5) participated in SES, over 40% of participants were in grades 1 and 2.

Figure 1
Students Participating in SES by Grade
2009-10

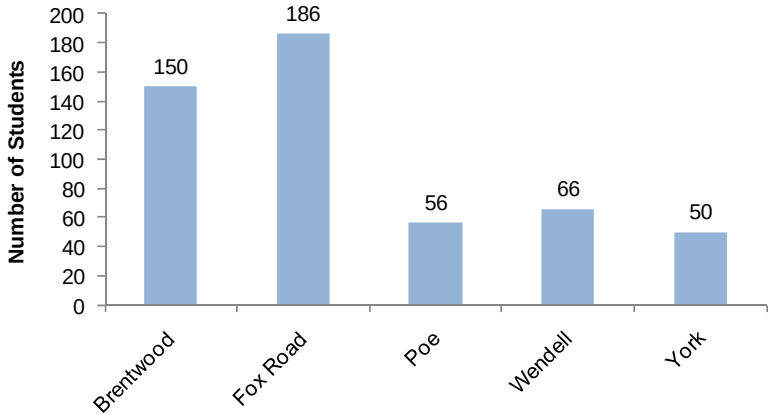


Data Source: 2009-10 End-of-Year Elementary School Student Rosters

SCHOOLS OFFERING SES

Among the 508 students receiving services at the five elementary schools offering SES in 2009-10, 186 (36.6%) attended Fox Road, 150 (29.5%) attended Brentwood, 56 (11.0%) attended Poe, 66 (13.0%) attended Wendell, and 50 (9.8%) attended York (see Figure 2).

Figure 2
Students Participating in SES by School
2009-10



Data Source: Data file obtained from DPI via an electronic data file generated from the Consolidated Federal Data Collection System.

Question 1: Has SES been effective in terms of outcomes for students (compared to students not served, FRL students not served, and the district overall)?

The 2009-10 reading and mathematics achievement results for all SES participants (K-5) are presented in Appendix A. In order to contextualize SES students' 2009-10 academic achievement, the percentage of students proficient in 2008-09 was compared to the proficiency rate in 2009-10 for reading and mathematics. Only students with scores in both years were included within these comparisons. In reading, the percentage of SES participants proficient increased from 2008-09 to 2009-10. In mathematics, the percentage of participants proficient increased from 2008-09 to 2009-10 among students in grades 4 and 5 and decreased among students in grades 1 and 2.

In reading, the percentage of SES participants proficient increased slightly from the prior year.

In mathematics, the percent proficient increased at grades 4 and 5 and decreased at grades 1 and 2.

Additionally, SES student performance is compared to non-SES participants attending one of the five schools offering SES in 2009-10, non-SES FRL students within these schools, and the district overall.

GRADES 1 AND 2

READING ACHIEVEMENT 2008-09 TO 2009-10

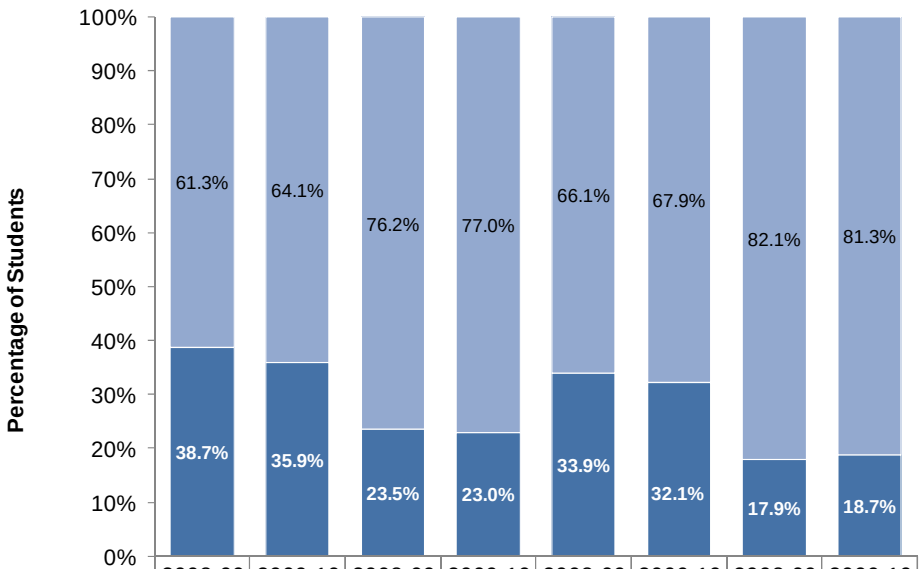
Figure 3 depicts the percentage of students at or above grade level based on book level in 2008-09 and 2009-10 for students enrolled in grades 1 and 2 in 2009-10 (kindergarten students are not included in this figure since they do not have 2008-09 data). First, it is important to note that over 60% of those served met the book level standard the year prior to service. Second, those served through SES showed slightly more positive changes than the other groups.

- The percentage of students served by SES who performed at or above grade level based on book level increased slightly by 2.8 percentage points (from 61.3% to 64.1%).

- The percentage of FRL students *not* served who were at or above grade level increased 1.8 percentage points (from 66.1% to 67.9%), while for students *not* served and WCPSS overall the percentage of students at or above grade level remained relatively constant.

Examined in another way, from 2008-09 to 2009-10, students participating in SES had the largest decrease in the number of students below grade level (55 to 51 students or 7.3%) compared to students *not* served (100 to 98 students or 2%), FRL students *not* served (74 to 70 students or 5.4%), and WCPSS overall which actually experienced a slight increase in students scoring below grade level (2,670 to 2,802 students or 4.9%).

Figure 3
Book Level 2008-09 and 2009-10, Grades 1 and 2



	2008-09	2009-10	2008-09	2009-10	2008-09	2009-10	2008-09	2009-10
	Served		Not Served		FRL Not Served		WCPSS	
At or Above Grade Level	87	91	326	328	144	148	12,283	12,151
Below Grade Level	55	51	100	98	74	70	2,670	2,802

Note: 1. Served = grade 1 and 2 students participating in SES in 2009-10; Not Served = grade 1 and 2 students attending one of the five school offering SES in 2009-10 not participating in SES; FRL Not Served = students in the Not Served group who receive free or reduced-price lunch; and WCPSS = all grade 1 and 2 students with available data.
2. Students with available 2008-09 and 2009-10 book level scores are shown in this figure.
3. Groups are nested such that Served, Not Served, and FRL Not Served are included within WCPSS and FRL Not Served is a subgroup of Not Served.

Data Source: 2009-10 End-of-Year Elementary School Student Rosters

Interpretation Example: In 2008-09, 87 (61.3%) of served students were at or above grade level and in 2009-10 that number increased to 91 students (64.1%).

MATHEMATICS PROFICIENCY 2008-09 TO 2009-10

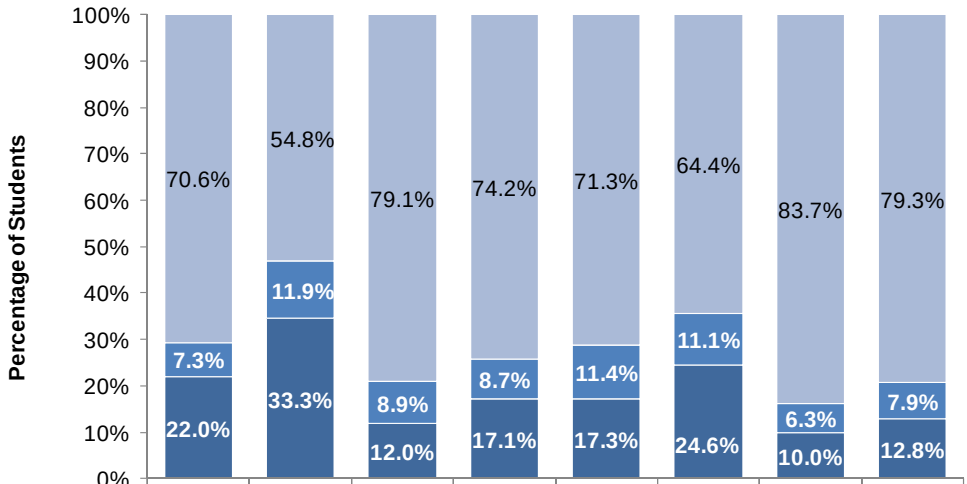
Figure 4 illustrates the percentage of SES students proficient in 2008-09 and 2009-10. For students in grades 1, 2, and 3 the prior year's mathematics score was based on the number of mathematics strands (algebra, number sense, geometry, data and analysis, and measurement) in which they were proficient (i.e., scored level 3 or 4) in 2008-09; thus, for grade 1 students, prior year represents their score at the end of kindergarten. Most students in the SES program had shown mastery on four or five of the five math strands before service (70.6%). After service, Figure 4 illustrates that:

- The percentage of students proficient in 4 or 5 mathematics strands decreased for both participants and matched non-participants. However, the drop was three times as large for those served (15.8 percentage points) versus those not served (4.9 percentage points).

- Decreases between 2008-09 and 2009-10 were also seen for FRL students *not* served and WCPSS students, but both decreases were considerably smaller than for those served.

- SES participants had a larger percentage point increase (11.3 percentage points) in students who were either not proficient on any of the five mathematics strands or only proficient on one strand than students *not* served, FRL students *not* served, and WCPSS overall.

Figure 4
Mathematics Strands 2008-09 and 2009-10
Grades 1 and 2



	2008-09	2009-10	2008-09	2009-10	2008-09	2009-10	2008-09	2009-10
	Served		Not Served		FRL Not Served		WCPSS	
4 to 5	125	91	463	434	206	186	17,352	16,433
2 to 3	13	21	52	51	33	32	1,301	1,628
0 to 1	39	59	70	100	50	71	2,071	2,663

Data Source: 2009-10 End-of-Year Elementary School Student Rosters
Interpretation Example: In 2008-09, 125 (70.6%) of served students were proficient on 4 or 5 mathematics strands (number and operations; measurement; geometry; data analysis and probability; and algebra); in 2009-10 that number had decreased to 91 students (54.8%).

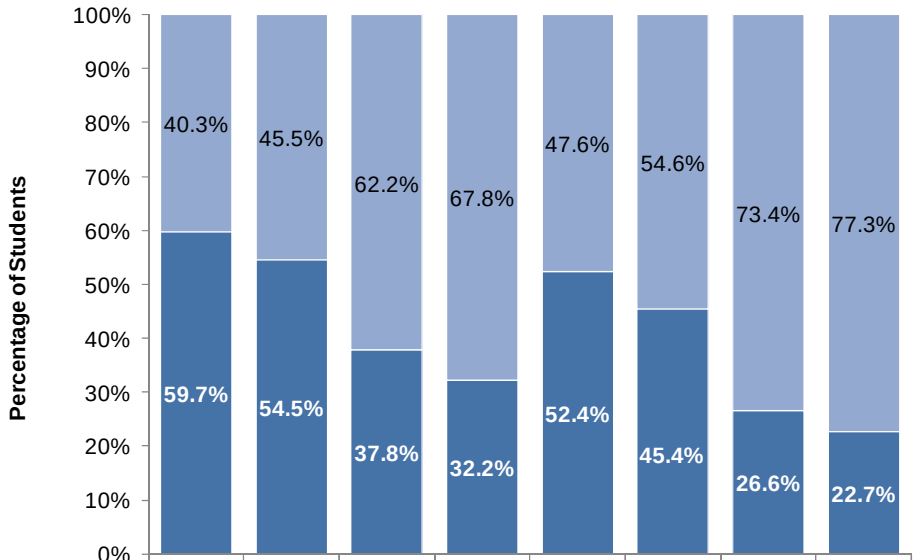
An additional analysis (not shown) found no differences in the patterns when disaggregated by initial mathematics achievement status.

GRADES 4 AND 5

READING ACHIEVEMENT 2008-09 TO 2009-10

Figure 5 displays the percentage of students in grades 4 and 5 at or above grade level (based on reading EOG performance) in 2008-09 and 2009-10. Grade 3 students are not included in this figure since they do not have a pre-score (i.e. 2008-09 EOG score). For all groups considered (SES served, not served attending a school offering SES, FRL not served attending a school offering SES, and WCPSS), the percentage of students at or above grade level increased between 2008-09 and 2009-10. Students participating in SES had a smaller percentage point increase in students reaching grade level than FRL students *not* served (5.2 versus 7.0); the percentage point change was similar for those served versus all students not served (5.2 versus 5.6). Thus, the largest percentage point increase in students proficient was for FRL students attending one of the five schools offering SES who elected not to participate in the program.

Figure 5
Reading EOG 2008-09 and 2009-10
Grades 4 and 5



	2008-09	2009-10	2008-09	2009-10	2008-09	2009-10	2008-09	2009-10
	Served		Not Served		FRL Not Served		WCPSS	
At or Above Grade Level	54	61	359	391	149	171	15,038	15,831
Below Grade Level	80	73	218	186	164	142	5,442	4,649

Note:
1. Served = grade 4 and 5 students participating in SES in 2009-10; Not Served = grade 4 and 5 students attending a school offering SES in 2009-10 not participating in SES; FRL Not Served = students in the Not Served group who receive free or reduced-price lunch; and WCPSS = all grade 4 and 5 students with available data.
2. Students with available 2008-09 and 2009-10 EOG scores are shown in this figure.
3. Groups are nested such that Served, Not Served, and FRL Not Served are included within WCPSS and FRL Not Served is a subgroup of Not Served.

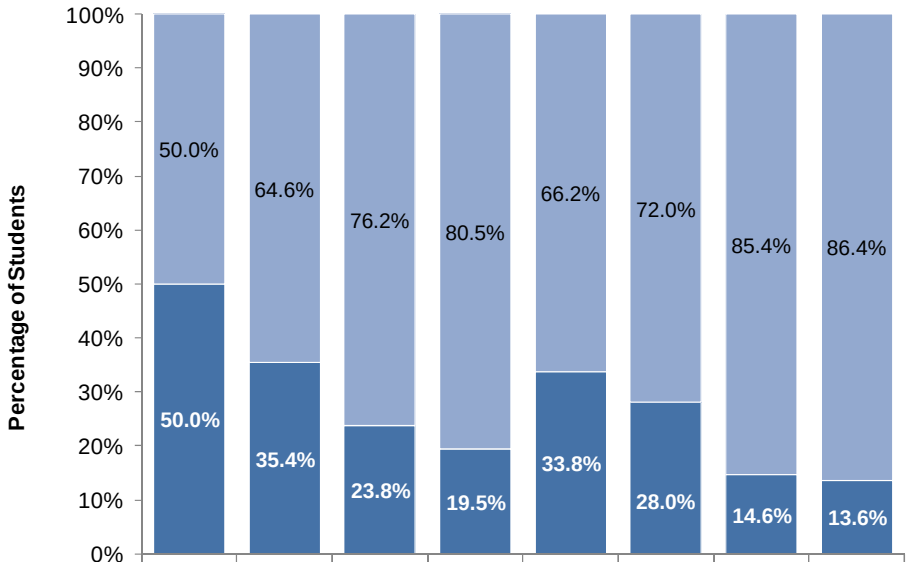
Data Source: 2009-10 End-of-Year Elementary School Student Rosters

Interpretation Example: In 2008-09, 54 (40.3%) of served students were at or above grade level and in 2009-10 that number increased to 61 students (45.5%).

MATHEMATICS ACHIEVEMENT 2008-09 TO 2009-10

Similar to the reading results, both served and *not* served student groups made improvements in the percentage of students at or above grade level. Figure 6 shows the students served by SES had a larger increase in the percentage of students reaching grade level than those *not* served within their schools. SES students also experienced the largest reduction in those scoring below grade level (65 to 46 students, or a reduction of 29.2%) compared to students *not* served (138 to 113 for students *not* served or 18.1%), and FRL students *not* served (106 to 88 students or 17.0%). Thus, mathematics proficiency results showed more positive patterns than reading over time on the EOG.

Figure 6
Mathematics EOG 2008-09 and 2009-10
Grades 4 and 5



	2008-09	2009-10	2008-09	2009-10	2008-09	2009-10	2008-09	2009-10
	Served		Not Served		FRL Not Served		WCPSS	
At or Above Grade Level	65	84	441	466	208	226	17,554	17,751
Below Grade Level	65	46	138	113	106	88	2,998	2,801

Note:
1. Served = grade 4 and 5 students participating in SES in 2009-10; Not Served = grade 4 and 5 students attending one of the five school offering SES in 2009-10 not participating in SES; FRL Not Served = students in the Not Served group who receive free or reduced-price lunch; and WCPSS all grade 4 and 5 students with available data.
2. Students with available 2008-09 and 2009-10 EOG scores are shown in this figure.
3. Groups are nested such that Served, Not Served, and FRL Not Served are included within WCPSS and FRL Not Served is a subgroup of Not Served.

Data Source: 2009-10 End-of-Year Elementary School Student Rosters

Interpretation Example: In 2008-09, 65 (50.0%) of served students were at or above grade level and in 2009-10 that number increased to 84 students (64.6%).

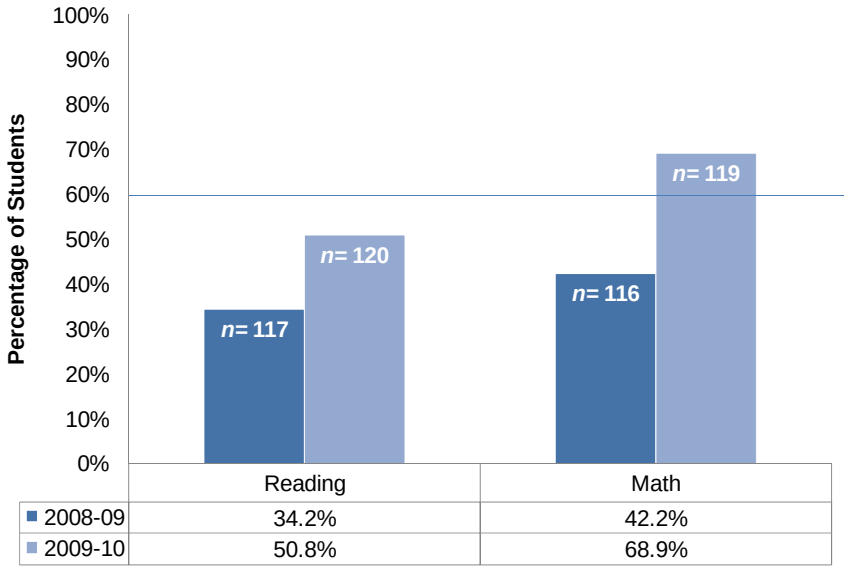
ACADEMIC GROWTH

A higher percentage of students met growth targets following SES services.

Increasing the percentage of students reaching growth targets is another way to gauge success in improving achievement, and is more sensitive to student gains even when growth was not sufficient to change level scores. The state's ABCs growth formula reflects approximately one year's growth for one year of instruction for each student. Schools are considered to show high growth if 60% of their students reach their growth target.

In both reading and mathematics, the percentage of SES participants who met growth increased from 2008-09 to 2009-10 (see Figure 7). Increases were 16.6 percentage points in reading and 26.7 percentage points in mathematics. Percent increases were considerable (48.5% in reading and more than 60% in math). In 2009-10, SES participants met high growth in mathematics, with 68.9% of students meeting their growth target.

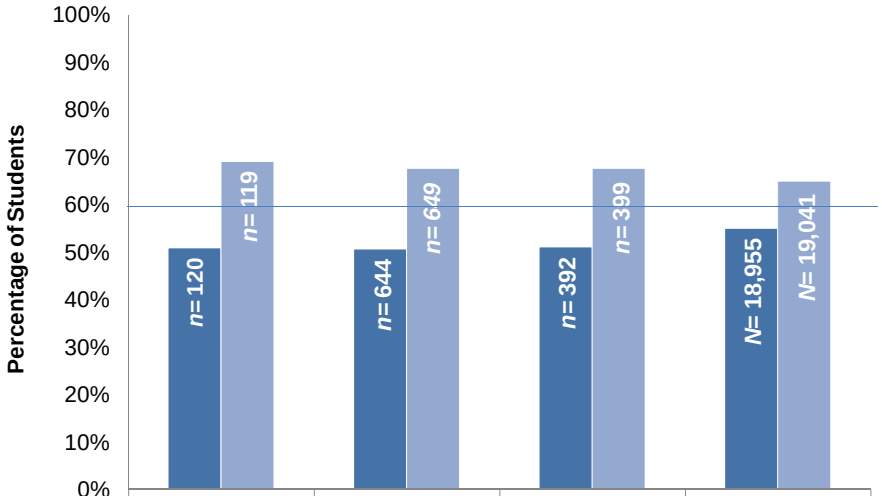
Figure 7
Percentage of SES Participants Meeting 2008-09 and 2009-10 Reading and Mathematics EOG Growth Targets Grades 4 and 5



Note: Students in membership 140 days or more are included in this figure.
Data Source: 2009-10 End-of-Year Elementary School Student Rosters

All student groups considered met growth for mathematics in 2009-10; but did not do so for reading (see Figure 8). The SES students served had slightly higher percentages of students reaching growth than the other three groups in mathematics. In reading, the percentage of students reaching growth targets was similar for SES students served, students *not* served, and FRL *not* served but was slightly lower than for WCPSS overall. While the student groups presented in Figure 8 were not matched to SES participants, considering how far below the district growth rate these students were before service (see Figure 7), these growth results are encouraging.

Figure 8
Percentage of Students Meeting 2009-10
Reading and Mathematics EOG Growth Targets
Grades 4 and 5



	SES Served	Not Served	FRL Not Served	WCPSS
Read	50.8%	50.6%	51.0%	55.1%
Math	69.1%	67.6%	67.7%	64.9%

Note: Students in membership 140 days or more are included in this figure.
Data Source: 2009-10 End-of-Year Elementary School Student Rosters

Question 2: How did the students in the program progress compared to matched students overall?

Overall, the findings suggest that participation in SES generally did not improve students' academic achievement beyond that achieved by matched students (measured by EOG proficiency and growth in grades 4 and 5 and book level and math strands in grades 1 and 2). There was however, one notable exception; among SES participants in grade 2 a significantly higher percentage reached proficiency in reading than did the matched students.

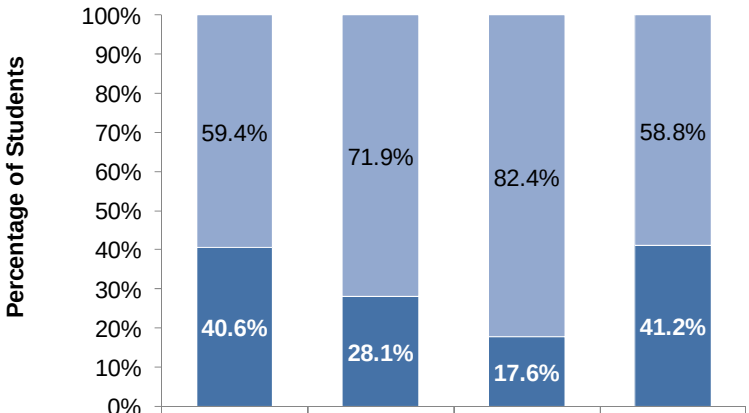
Participation in SES generally did not improve students' academic achievement beyond that achieved by matched students.

GRADES 1 AND 2

READING ACHIEVEMENT

Among students in grades 1 and 2 academic proficiency is compared for reading and mathematics (there is no growth component for the K-2 measures of proficiency). Students were matched on grade level, prior reading performance (i.e., book level proficiency for the end of the prior grade level), and several demographic characteristics—FRL, LEP, and SWD status. Figure 9 shows the reading proficiency for SES participants and matched students in grades 1 and 2. In 2009-10, a higher percentage of matched students were rated proficient than SES participants in grade 1; however, this difference was not significant. Among grade 2 students, a significantly higher percentage of SES students were proficient.

Figure 9
2009-10 Book Level for SES and Matched Students
Grades 1 and 2



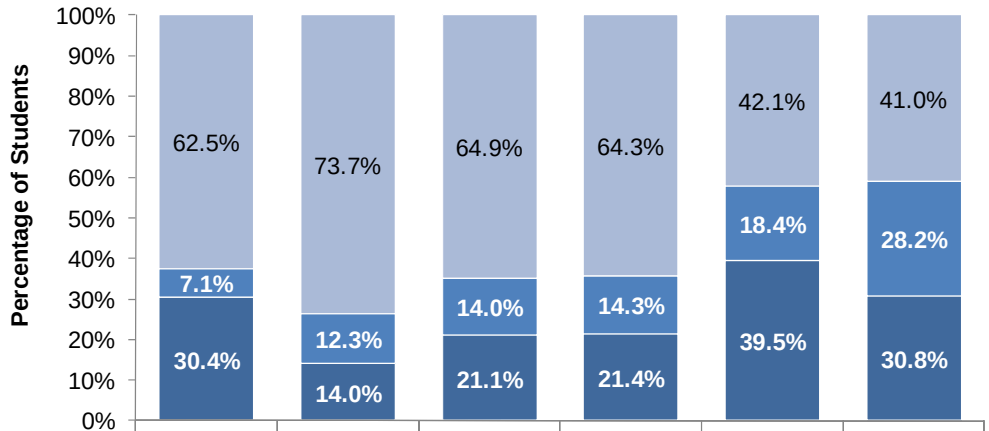
	SES Students	Matched Students	SES Students	Matched Students
	Grade 1		Grade 2	
At or Above Grade Level	38	46	42	30
Below Grade Level	26	18	9	21

Note: Significance based on a chi-square test for students participating in SES versus comparison students.
Data Source: 2009-10 End-of-Year Elementary School Student Rosters
Interpretation Example: Among served students in grade 2 in 2009-10, 42 (82.4%) were at or above grade level based on their reading book level compared to 30 (58.8%) of matched students.

MATHEMATICS ACHIEVEMENT

Students were matched on grade level, prior mathematics performance, and several demographic characteristics—FRL, LEP, and SWD status. For students in grades 1, 2, and 3 the prior year's mathematics score was based on the number of mathematics strands (algebra, number sense, geometry, data and analysis, and measurement) in which they were proficient (i.e. scored level 3 or 4). Figure 10 displays the mathematics proficiency for SES participants and comparison students in grades 1, 2, and 3. While at each grade level a higher percentage of comparison students were proficient on 4 or 5 mathematics strands than were SES participants, the differences were not statistically significant.

Figure 10
2009-10 Mathematics Strands for SES and Matched Students
Grades 1, 2, and 3



	SES Students	Matched Students	SES Students	Matched Students	SES Students	Matched Students
	Grade 1		Grade 2		Grade 3	
4 to 5	35	42	37	36	16	16
2 to 3	4	7	8	8	7	11
0 to 1	17	8	12	12	15	12

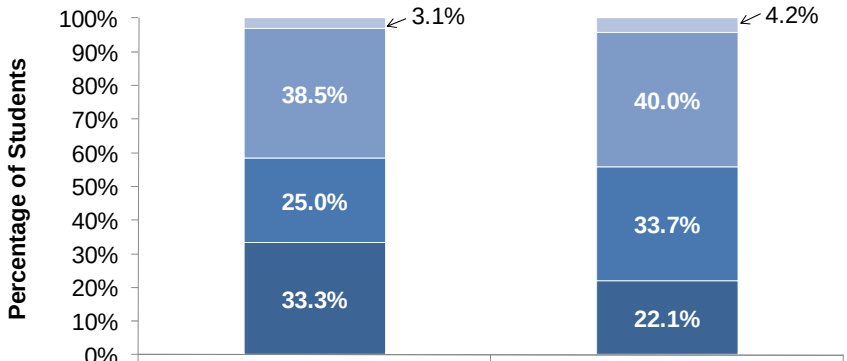
Note: Significance based on a chi-square test for students participating in SES versus comparison students.
Data Source: 2009-10 End-of-Year Elementary School Student Rosters
Interpretation Example: Among served students in grade 1, 35 (62.5 %) were at or above grade level on 4 or 5 mathematics stands in 2009-10 compared to 42 (73.7%) of matched students.

GRADES 3 - 5

EOG READING PROFICIENCY OF MATCHED STUDENTS

The reading EOG proficiency levels for students who participated in SES and matched students are presented in Figure 11. The overall proficiency (Level III and IV) for the two groups was similar. While slightly more matched students (44.2%) scored a Level III or IV on their EOG than did SES students (41.6%), differences were not significant. Scale score differences were also not significant (see Appendix B).

Figure 11
2009-10 Reading EOG Level for
SES and Matched Students, Grades 3-5



	SES Students n=96	Matched Students n=95
Level IV	3.1%	4.2%
Level III	38.5%	40.0%
Level II	25.0%	33.7%
Level I	33.3%	22.1%

Note: 1. *n* = students with an available 2009-10 Reading EOG score.
2. Significance based on a chi-square test for students participating in SES versus comparison students.

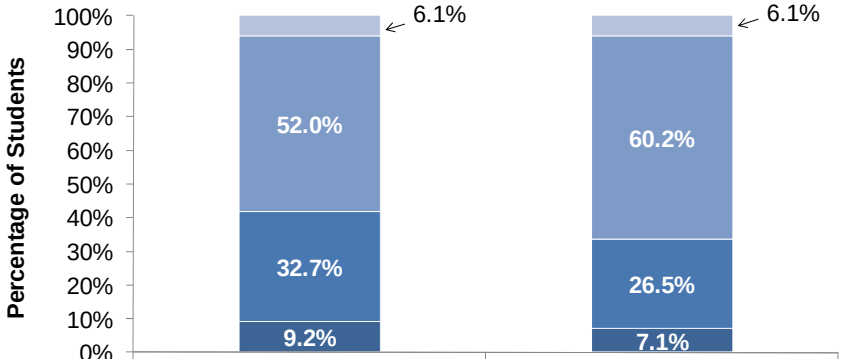
Data Source: 2009-10 End-of-Year Elementary School Student Rosters

Interpretation Example: 38.5% of SES participants scored a Level III in 2009-10 compared to 40.0% of matched students.

EOG MATHEMATICS PROFICIENCY OF MATCHED STUDENTS

Figure 12 depicts the mathematics EOG proficiency levels for students who participated in SES and matched students. A higher percentage of matched students (66.3%) scored a Level III or IV on their EOG than did SES students (58.1%); however, differences were not significant. Scale score differences were also not significant (see Appendix B).

Figure 12
2009-10 Mathematics EOG Level for
SES and Comparison Students, Grades 3-5



	SES Students n=98	Matched Students n=98
Level IV	6.1%	6.1%
Level III	52.0%	60.2%
Level II	32.7%	26.5%
Level I	9.2%	7.1%

Note: 1. *n* = students with an available 2009-10 Mathematics EOG score.
2. Significance based on a chi-square test for students participating in SES versus matched students.
Data Source: 2009-10 End-of-Year Elementary School Student Rosters
Interpretation Example: 52.0% of SES participants scored a Level III in 2009-10 compared to 60.2% of matched students.

ACADEMIC GROWTH OF MATCHED STUDENTS

As previously mentioned, increasing the percentage of students reaching growth targets is a more sensitive way to gauge success in improving achievement even when growth was not sufficient to change level scores. The state's ABCs growth formula reflects approximately one year's growth for one year of instruction for each student; and schools are considered to show high growth if 60% of their students reach their growth target.

Overall Growth

A higher percentage of SES participants met growth in mathematics than did their matched counterparts while the reverse was true for reading. However, the differences were not significant (see Figure 13).

Figure 13
Percentage of Students in Grades 4 and 5 Meeting 2009-10 Reading and Mathematics EOG Growth Targets

	Reading	Math
SES Students	43.5%	61.8%
Matched Students	52.3%	56.9%

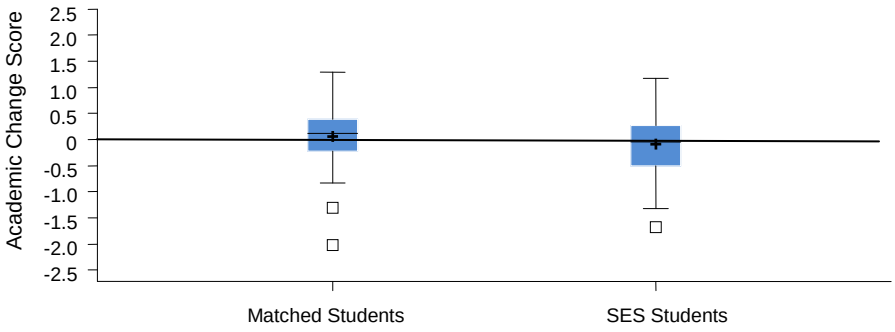
Note: 1. Significance based on a chi-square test for SES participants versus matched students.
2. Students in membership 140 days or more are included in this figure.
Data Source: 2009-10 End-of-Year Elementary School Student Rosters

Academic Change

Academic change is another way of consider students' growth from 2008-09 to 2009-10. The state ABCs academic change score reflects whether students as a group grew more or less than the target projection for that year. A growth score of zero means the target was met exactly. Figures 14 and 15 utilize boxplots to depict the mean, median, and range of the academic change score for SES served students and matched students in grades 4 and 5 enrolled in 2009-10. The box represents the majority of student scores (25^{th} to 75^{th} percentile). The "whiskers," or vertical lines, extending from the box, represent the range of scores, with the most extreme scores denoted by small boxes. The range of reading scores (denoted by the "whiskers") was greater for matched students, while in mathematics the range was similar for the two groups. The academic change scores of SES participants were slightly higher than that of matched students. Within each box, the mean is signified by a plus sign and the median by a horizontal line in the middle of the box. The average academic change scores in reading and mathematics hovered close to zero, indicating performance close to what was expected (see Figure 14 and 15

respectively). Although there were slight differences in the mean academic change scores between matched students and SES students, the differences were not statistically significant.[5] Thus, the results should be considered approximately the same.

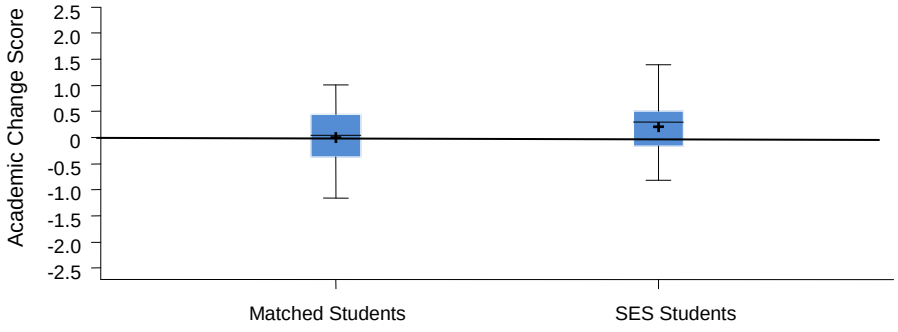
Figure 14
Reading EOG Academic Change Score
SES and Matched Students, Grades 4 and 5, 2009-10



	Matched Students	SES Students
Min	-2.0	-1.7
Mean	0.06	-.09
Max	1.29	1.17
Std Dev	0.60	0.56
N	47	47

Data Source: 2009-10 End-of-Year Elementary School Student Rosters
Interpretation Example: SES participants had an average academic change score slightly less than zero (signified by plus sign on blue bar).

Figure 15
Mathematics EOG Academic Change Score
SES and Matched Students, Grades 4 and 5, 2009-10



	Matched Students	SES Students
Min	-1.2	-.81
Mean	0.01	0.21
Max	1.00	1.39
Std Dev	0.53	0.51
N	55	54

Data Source: 2009-10 End-of-Year Elementary School Student Rosters

[5] Significance based on a t-test on the difference of mean academic change score for students participating in SES versus matched students.

Question 3: How did the students in the program progress by NCLB subgroups?

SES seemed to benefit Hispanic/Latino students in reading and mathematics, LEP students in reading, and Black/African American and SWD students in mathematics the most.

SES seemed to benefit Hispanic/Latino students in reading and mathematics, LEP students in reading, and Black/African American and SWD students in mathematics the most. Hispanic/Latino participants experienced the most growth, meeting high growth (more than 60% of students having met their growth target) in reading and mathematics; however, the percentage who met growth was not significantly higher than other student groups.

GROWTH BY NCLB SUBGROUPS

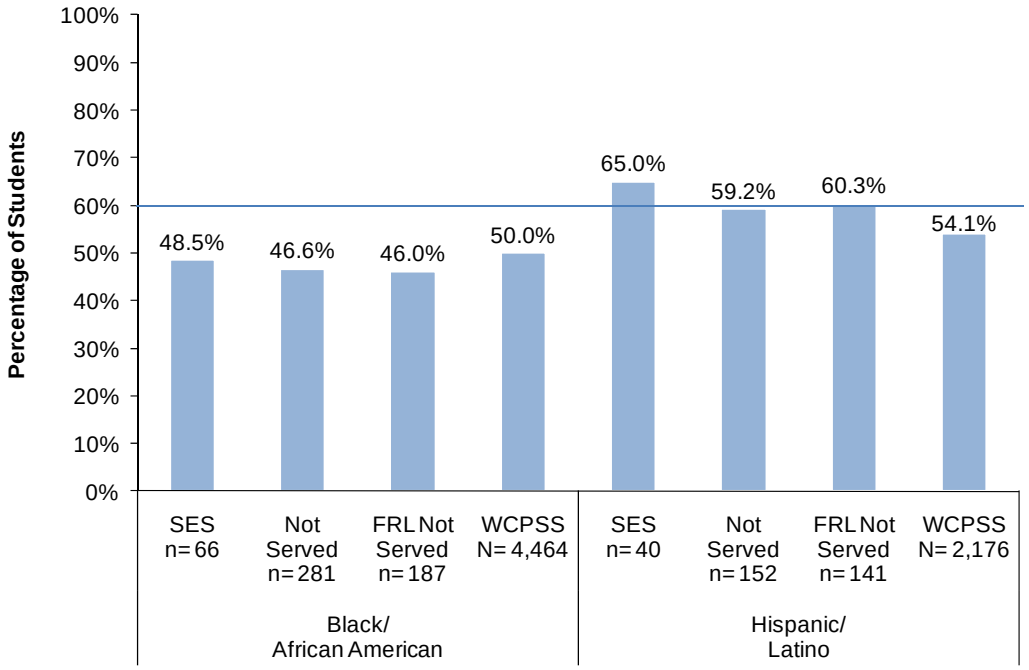
To address the question, *How did the students in the program progress by NCLB subgroups*, the percentage of students meeting growth was examined. In order to provide context for SES participants' results, SES students' performance was compared to non-SES participants attending one of the five schools offering SES in 2009-10, non-SES FRL students within these schools, and the district overall. Analyses of matched students by subgroup were not appropriate due to small subgroup sizes and are therefore not shown.

READING

Overall, 438 or 86.2% of the 508 students participating in SES in 2009-10 were either Black/African American or Hispanic/Latino. Therefore, results by ethnicity include only these two groups; other subgroup sizes were too small for inclusion (less than 20). Figure 16 illustrates the percentage of students who met growth in reading within these ethnic groups. SES participants (who were Black/African American and those who were Hispanic/Latino) had a higher percentage meet growth than students within those ethnic groups who were not served by SES.

- Hispanic/Latino students met high growth with greater than 60% of students meeting growth for SES participants and FRL students *not* served, but not for all students *not* served or WCPSS overall.
- While Black/African American students did not meet high growth, SES participants had a slightly higher percentage of students make growth than students *not* served or FRL students *not* served.

Figure 16
Percentage of Students in Grades 4 and 5 Meeting 2009-10 Reading EOG Growth Target by Ethnicity

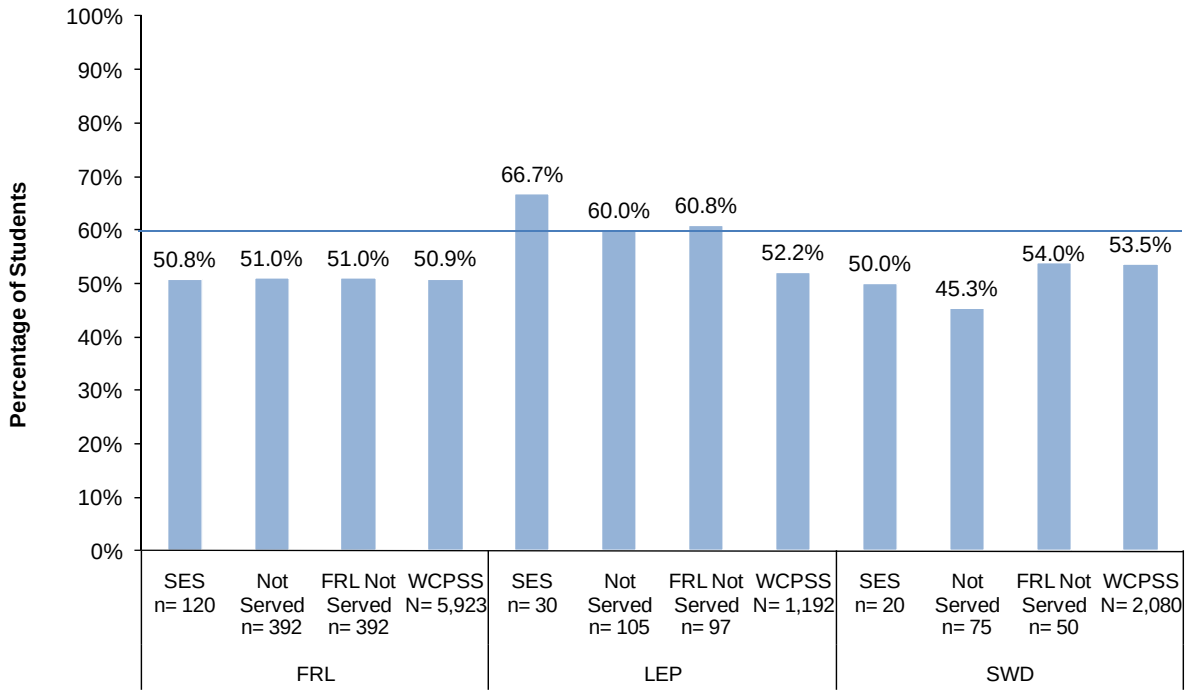


Note: 1. Due to group sizes smaller than 20 students among students participating in SES, Asian, White, and Multi-Racial students were not included in this figure.
2. Students in membership 140 days or more are included in this figure.
Data Source: 2009-10 End-of-Year Elementary School Student Rosters
Interpretation Example: 65.0% of the Hispanic/Latino students participating in SES met growth in 2009-10, compared to 59.2% of students attending an SES school but not served, 60.3% FRL not served at an SES school, and 54.1% in WCPSS overall.

Figure 17 illustrates the percentage of SES participants and the comparison students who met growth in reading by FRL, LEP, and SWD status. Among SES students, the LEP student group met high growth, but the FRL and the SWD student groups did not.

- Among FRL students, the percentage of students who met growth was similar across the groups.
- Among LEP students, SES participants had a higher percentage of students meet growth than the other student groups considered, but differences were not statistically significant.
- Among SWD students, SES participants had a higher percentage of students meet growth than students *not* served, but not FRL students *not* served or WCPSS, although differences between SES participants and other student groups were not significant.

Figure 17
Percentage of Students in Grades 4 and 5 Meeting 2009-10 Reading EOG Growth Target by Academic Risk Factor

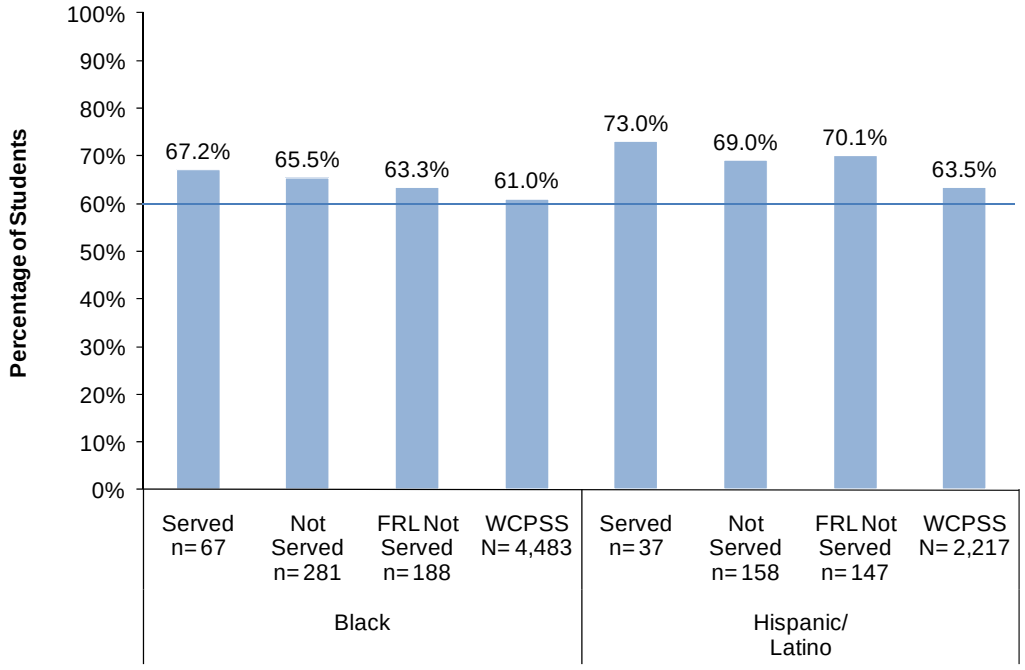


Note: Students in membership 140 days or more are included in this figure.
Data Source: 2009-10 End-of-Year Elementary School Student Rosters
Interpretation Example: 66.7% of LEP students participating in SES met growth for reading in 2009-10, compared to 60.0% of students not served, 60.8% of FRL students not served, and 52.2% in WCPSS overall.

MATHEMATICS

Figure 18 illustrates the percentage students who met growth in mathematics by ethnicity for students participating in SES, non-SES participants attending one of the five schools offering SES in 2009-10, non-SES FRL students within these schools, and the district overall. The figure only includes Black/African American and Hispanic/Latino students due to the small group sizes (<20 students) of the other ethnic groups. Black/African American and Hispanic/Latino students met high growth for all comparison groups; comparisons within both ethnic groups favored those served in SES. Hispanic/Latino results for each comparison were more positive than for those of Black/African American students.

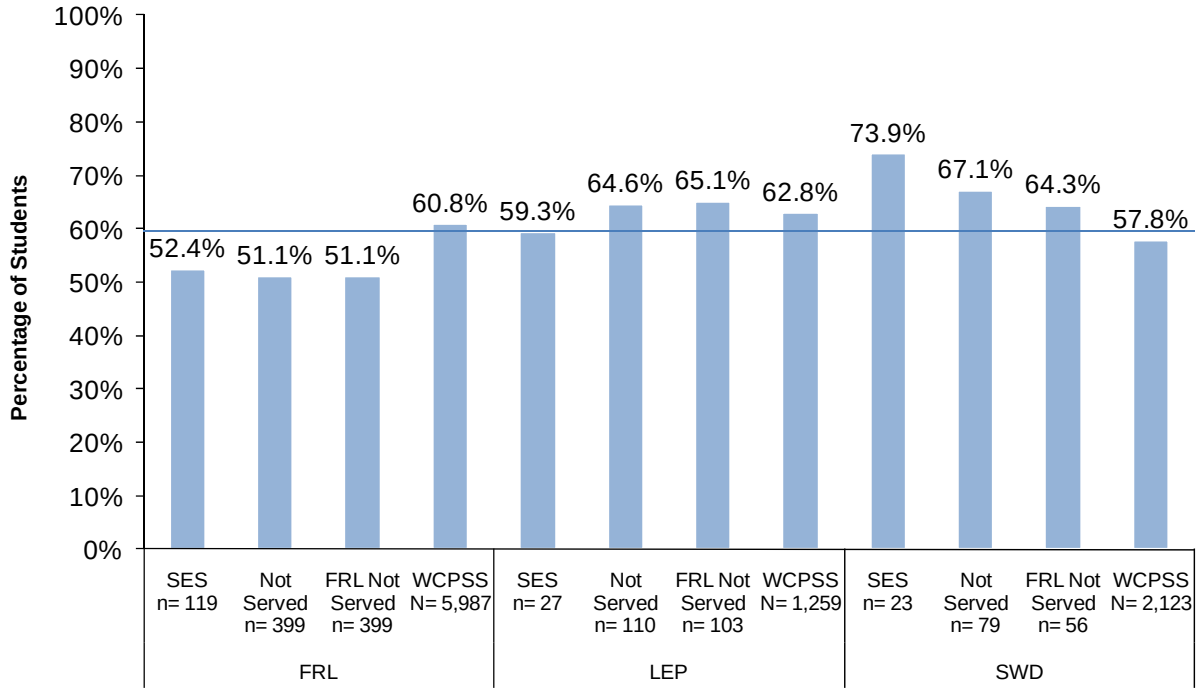
Figure 18
Percentage of Students in Grades 4 and 5 Meeting 2009-10 Mathematics EOG Growth Target by Ethnicity



Note: 1. Due to group sizes smaller than 20 students among students participating in SES, Asian, White, and Multi-Racial students were not included in this figure.
2. Students in membership 140 days or more are included in this figure.
Data Source: 2009-10 End-of-Year Elementary School Student Rosters
Interpretation Example: 73.7% of the Hispanic/Latino students participating in SES met growth for mathematics in 2009-10, compared to 69.9% of students not served, 71.0% of FRL students not served, and 63.5% in WCPSS overall.

Figure 19 illustrates the percentage of students who met growth in mathematics by FRL, LEP, and SWD status for students participating in SES and the comparison groups. Among SES students, the SWD student group met high growth in mathematics while the LEP and FRL (all SES participants) groups did not. The SWD group showed the most positive pattern with a higher percentage of SES students reaching growth than any of the comparison groups, although differences between SES participants and other student subgroups were not statistically significant.

Figure 19
Percentage of Students in Grades 4 and 5 Meeting 2009-10 Mathematics EOG Growth Target by Risk Factor



Note: Students in membership 140 days or more are included in this figure.
Data Source: 2009-10 End-of-Year Elementary School Student Rosters
Interpretation Example: 73.9% of SWD students participating in SES met growth for mathematics in 2009-10, compared to 67.1% of not served students attending a school offering SES, 64.3% FRL not served at an SES school, and 57.8% in WCPSS overall.

CONCLUSIONS

The long-term goal of SES was to improve student achievement. In order to contextualize the SES results, comparisons to matched students and other reference groups were provided in this evaluation. However, it is also helpful to consider how successful SES was in meeting its goals independent of a comparison. Table 6 displays the status of SES goals independent of a comparison and compared to the results of students matched one-to-one on prior achievement and demographic characteristics. The degree to which SES met its three goals was examined for reading and mathematics separately.

Independent of a comparison, the outcomes for students participating in SES were relatively positive. In reading, two of the three goals were met; a higher percentage of SES students were proficient in reading and met growth in 2009-10 than in 2008-09 prior to services. The third goal, all subgroups meeting growth, was partially met with two of the five student subgroups considered meeting high growth. In mathematics, one of the three goals was met, with a higher percentage of SES participants meeting growth in 2009-10 than in 2008-09. Two of the three goals were partially met, with a higher percentage of SES participants in grades 4 and 5 proficient in 2009-10, but not in grades 1 and 2; and three of the five student subgroups considered meeting high growth. SES seemed to benefit Hispanic/Latino students in reading and mathematics, LEP students in reading, and Black/African American and SWD students in mathematics although within subgroups differences between SES participants and comparison student groups were not significant.

Table 6
Status of 2009-10 SES Long-term Goals

Long-Term Goal	Subject	Status Independent of Comparison	Results Compared to Matched Students
A higher percentage of SES students proficient on reading and mathematics EOGs than prior year before receiving SES.	**Reading**	**Met**	A significantly higher percentage of grade 2 students were proficient; however, no significant differences in grades 1, 4, or 5
	Math	**Partially Met** (Not Met at grades 1 & 2. Met at grades 4 & 5.)	No significant difference
A higher percentage of SES participants meeting reading and mathematics growth targets (academic change) than prior year before receiving SES (grades 4 and 5).	**Reading**	**Met**	No significant difference
	Math	**Met**	No significant difference
All subgroups meeting reading and mathematics growth targets (academic change) on EOG.	**Reading**	**Partially Met** (met with 2 out of 5 subgroups)	No significant difference
	Math	**Partially Met** (met with 3 out of 5 subgroups)	Comparisons to matched group could not be conducted due to small subgroup sizes

Data Source: Data file obtained from DPI via an electronic data file generated from the Consolidated Federal Data Collection System and 2009-10 End-of-Year Elementary School Student Rosters.

However, effectiveness of a program is always best assessed in comparison to progress of similar students. In the case of SES, overall outcomes were similar to matched students not receiving SES. Thus, the findings suggest that participation in SES generally did not improve students' academic achievement beyond that achieved by matched students and non-participants through regular instruction and supplements normally available. While overall SES participants' academic achievement did not improve beyond that achieved by matched students, it is notable that grade 2 students performed significantly better in reading than matched students.

DISCUSSION

This series of reports evaluating SES within WCPSS found SES to be in compliance with federal guidelines, implemented with fidelity in most ways, and to have some evidence of improved student achievement (Paeplow & Baenen, 2011; Paeplow, 2011). Relative to the report on the first SES program at Hodge Road Elementary, which only examined reading, reading results were similar with more positive findings at grades 1 and 2 than in grades 4 and 5 (Paeplow & Baenen, 2006). In fact, in grade 2 the percentage of students proficient in 2009-10 was significantly higher for SES participants than matched students. However, the fact that overall SES participants did not show significant improvement over matched students (matched by pre-score and demographics attending similar Title I schools) raises further questions.

Why did the percentage of SES participants proficient on mathematics strands decrease more dramatically than for other groups considered? The percentage of WCPSS students proficient on the five mathematics strands decreased by grade level such that a lower percentage of grade 1 students were proficient than kindergarten students. This decrease may be due to increased standards as the grade level increases. However, the fact that SES participants proficient on mathematics strands decreased more dramatically than for other groups considered may signify the need to better match tutoring services to the curriculum, provide increased differentiation for students, and/or provide innovative instruction to capture student interest.

Did individualized student learning plans create enough differentiation in students' learning experiences? In 2006, an evaluation conducted of the SES program offered at Hodge Road Elementary, the first WCPSS school required to offer SES, found the inappropriate use of remedial curriculum materials with FRL students who began the program at or above grade level (Paeplow & Baenen, 2006). The second SES report, Implementation of Supplemental Education Services: 2009-10, found that in 2009-10, tutoring services were based on individualized learning plans developed utilizing each student's prior achievement (Paeplow, 2011). However, given SES student results were not significantly better than matched students, further differentiation may be warranted and/or more engaging materials.

Are adjustments to state requirements needed? North Carolina's Department of Public Instruction (DPI) approves providers and establishes requirements for the provision of SES. However, given the SES program was implemented with fidelity there may be a necessity to

review current SES requirements to determine if elements such as the number of hours of service required should be increased (at least for the lower achieving students), if there are any best instructional practices that should be added, or whether tutoring curriculums have a strong enough alignment to the state's curriculum and enough variation to truly meet the needs of all students. One change that seems appropriate is to move the requirement that school follow up with parents when students are not attending regularly from the school to the provider. State guidance on how to make the most of small group instruction and to differentiate service may be warranted as well.

In March 2011, WCPSS submitted an application to provide SES services in 2011-12. WCPSS would provide targeted interventions and enrichment for individual students through direct instruction by certified teachers and utilize web technology (which will also be accessible from home for students with access to a computer). After-school sessions will be offered twice a week for 10 weeks. Student groups will consist of no more than six students and transportation will be provided by the district. The curriculum selected is Voyager Passport™, a research-based reading intervention program targeting students in grades K-5. It will be important to consider the level of materials to be used and the degree of differentiation that is possible with the materials given that participants' prior achievement varied widely in 2009-10, with most students scoring at grade level prior to service.

Is SES unnecessary? The possibility that SES is not the best utilization of funds could be raised based on these results. SES is a federal requirement, but sharing concerns with the appropriate authorities is recommended. Perhaps other services meet similar needs and therefore no greater results are obtained through SES. Perhaps FRL students scoring at grade level do not need this type of service, but could benefit from something else. An extensive review of the literature and other models for delivery of SES could shed more light on this question.

RECOMMENDATIONS

While a higher percentage of SES participants met growth in 2009-10 than in 2008-09 prior to receiving services, generally the SES program in 2009-10 did not improve students' academic achievement beyond that achieved by matched students (with the exception of grade 2 reading). While sample sizes were smaller than would be optimal, the value added by this expenditure of funds could not be demonstrated in our study. SES is required through Title I regulations, but we offer the following recommendations for improvement:

- ***Improve the quality of services provided.*** All vendors should consider these findings and determine ways to strengthen their services. Increased differentiation of services may still be needed. Vendors, site coordinators, and Title I staff should monitor teachers' delivery of service to ensure this occurs, and intervene when it does not. DPI might provide videos or other guidance on how to make the most of small group instruction and to differentiate service as well.

- ***Work with DPI staff to examine SES program requirements.*** DPI should examine current SES requirements to determine if adjustments should be made (i.e., number of hours, instructional strategies, or tutoring curriculum).

- ***Share concerns with DPI and the U.S. Department of Education about the focus and success of the current SES program.*** These concerns should be shared with the positive motivation of providing the most effective support possible for students. Ways to improve the program or alternatives to it should also be shared.

Additional recommendations from the first two reports in this series included:

SUPPLEMENTAL EDUCATION SERVICES: 2008-09 & 2009-10

- Provide academic support to non-eligible students performing below grade level.
- Increase participation in SES.
- Develop or refine electronic data collection systems with unique student identifiers.

IMPLEMENTATION OF SUPPLEMENTAL EDUCATION SERVICES: 2009-10

- School Site Coordinators should share information with classroom teachers.
- Increase collaboration and clarify and refine existing monitoring procedures.
- Monitor providers to ensure that parents of students not attending are contacted.
- Collect pre- and post assessment results centrally and post-assess program completers.

In light of this report's finding, we are not recommending increased participation in SES as it is currently structured until the recommendations based on implementation findings and the 2009-10 student outcomes are addressed. Further differentiation of tutoring services and consistent

sharing of information between stake holders including school site coordinators, classroom teachers, and providers should strengthen services provided to students. It is recommended that WCPSS program planners take into account the findings within this report series and build into our SES program greater differentiation of services and increased communication between stakeholders. For further information regarding recommendations for strengthening the implementation of SES see the previous two SES reports in this series: Supplemental Education Services: 2008-09 & 2009-10 (Paeplow & Baenen, 2011) and Implementation of Supplemental Education Services: 2009-10 (Paeplow, 2011).

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APPENDIX A

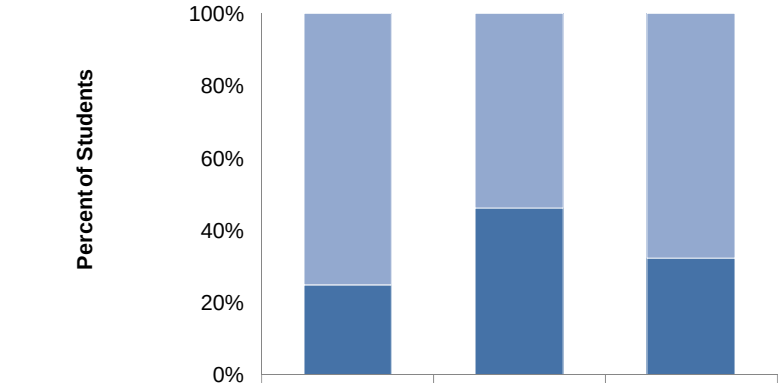
SES PARTICIPANTS' READING AND MATHEMATICS ACHIEVEMENT 2009-10

This appendix includes all students tested in 2009-10, regardless of whether they had a pretest available or not. This provides readers with a sense of results for the total group, but it does not allow a comparison to prior performance nor to similar subgroups. A higher percentage of SES students were proficient in mathematics than in reading at all grade levels with the exception of students in grade 2.

Grades K-2

Among K-2 students, kindergarten students had the highest percentage of students performing at or above grade level in reading and mathematics (see Figure A1 and A2 respectively). While this pattern was also found at the district level, the percentage of SES students proficient in reading and mathematics in 2009-10 was considerably lower than for WCPSS overall (e.g., SES reading percentages were 15.1 percentage points lower for kindergarten students, 28.8 for grade 1, and 17.4 for grade 2). Both kindergarten and grade 1 students were proficient at a higher rate on all five mathematics strands (algebra, number sense, geometry, data and analysis, and measurement) than for reading (based on book level proficiency). For grade 2 students, however, the reverse was true.

Figure A1
SES Participants 2009-10 Book Level, Grades K-2



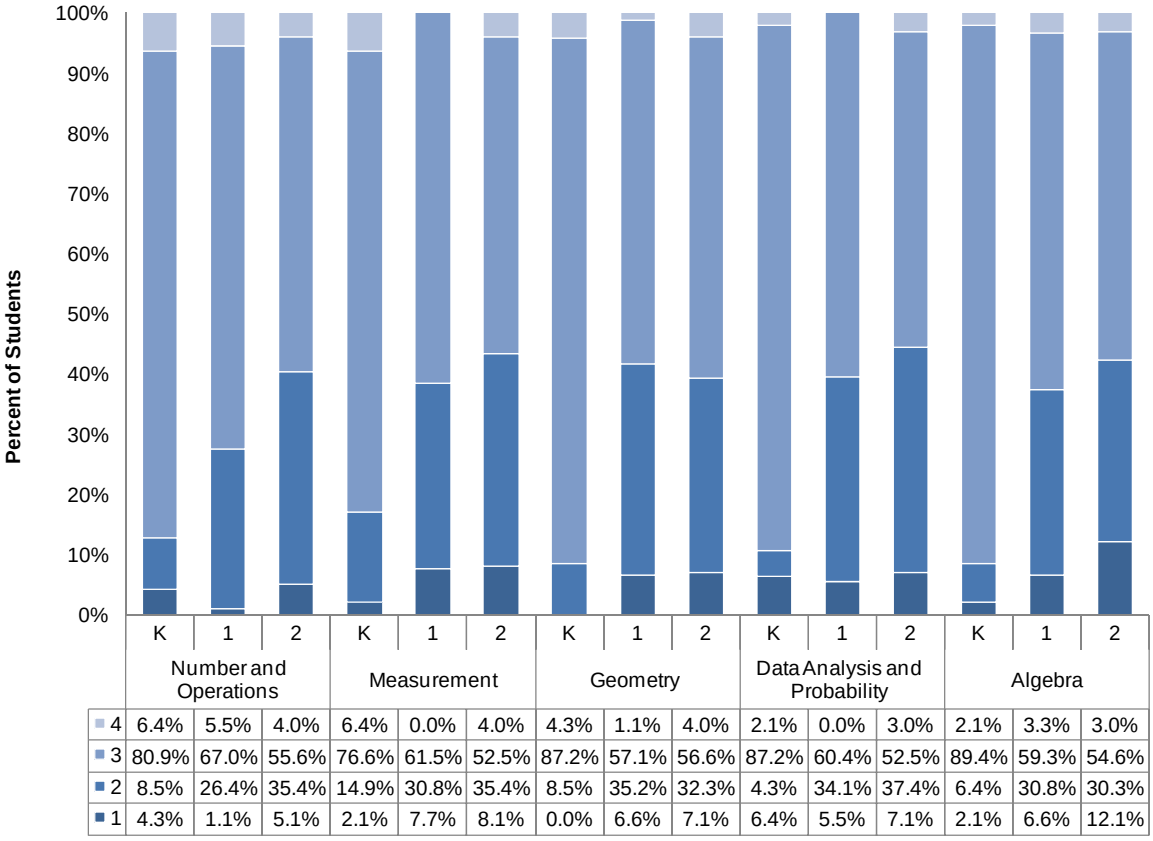
	Kindergarten n= 56	Grade 1 n= 91	Grade 2 n= 74
At or Above Grade Level	75.0%	53.9%	67.6%
Below Grade Level	25.0%	46.2%	32.4%

Data Source: 2009-10 End-of-Year Elementary School Student Rosters
Interpretation Example: In 2009-10, 75.0% of kindergarten students served were at or above grade level based on their book level.

Across all mathematics strands, kindergarten students showed the highest percentage of students who were proficient (receiving a level 3 or 4). Ninety-one percent of the SES kindergarten students received a level 3 or 4 on the algebra and geometry strands. Students in grades 1 and 2 experienced lower rates of proficiency. There was a similar pattern among WCPSS K-2 students

proficient on all five strands (see Table A1). Among students in grade 1, the strand with the highest percentage of students proficient was numbers and operations (72.5%). While among grade 2 students, the strand with the highest percentage proficient was geometry (60.6%).

Figure A2
SES Participants 2009-10 Mathematics Strands
Grades K-2



	Number and Operations			Measurement			Geometry			Data Analysis and Probability			Algebra		
	K	1	2	K	1	2	K	1	2	K	1	2	K	1	2
4	6.4%	5.5%	4.0%	6.4%	0.0%	4.0%	4.3%	1.1%	4.0%	2.1%	0.0%	3.0%	2.1%	3.3%	3.0%
3	80.9%	67.0%	55.6%	76.6%	61.5%	52.5%	87.2%	57.1%	56.6%	87.2%	60.4%	52.5%	89.4%	59.3%	54.6%
2	8.5%	26.4%	35.4%	14.9%	30.8%	35.4%	8.5%	35.2%	32.3%	4.3%	34.1%	37.4%	6.4%	30.8%	30.3%
1	4.3%	1.1%	5.1%	2.1%	7.7%	8.1%	0.0%	6.6%	7.1%	6.4%	5.5%	7.1%	2.1%	6.6%	12.1%

Data Source: 2009-10 End-of-Year Elementary School Student Rosters
Interpretation Example: In 2009-10, 54.6% of served grade 2 students received a 3 on the Algebra strand.

Table A1
WCPSS Reading and Mathematics Proficiency Percentages K-2 Data, 2009-10

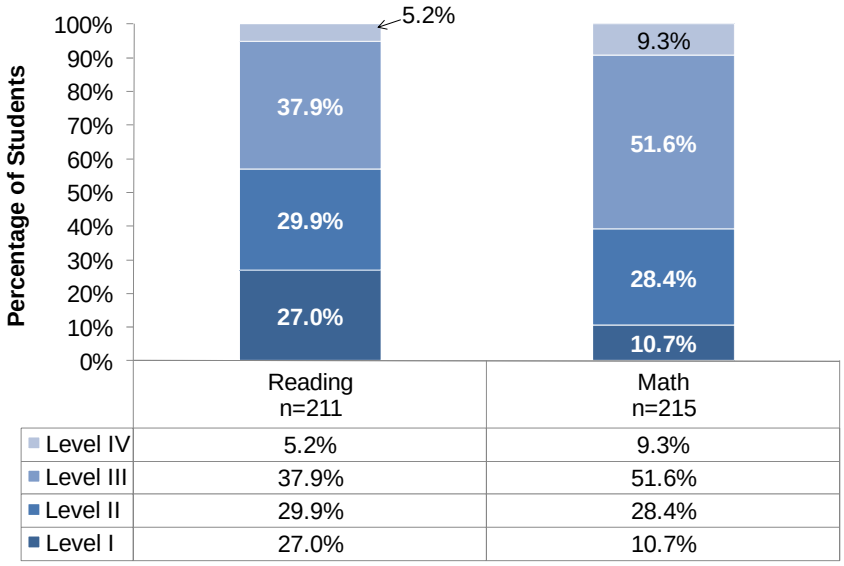
	Grade	2008-09	2009-10
Book Level Standards	**K**	88.9%*	90.1%
	1	80.1%	82.7%
	2	83.7%	85.0%
Mathematics All Strands	**K**	80.8%	83.8%
	1	73.4%	74.8%
	2	66.9%	69.0%

Note: 1. * indicates that 5 to 9.9% of the K-2 population had missing scores.
2. Arrows indicate cohorts of students (e.g., students in grade 1 in 2008-09 and 2 in 2009-10).
Data Source: 2009-10 Annual K-5 Assessment Data

Grades 3-5

A larger percentage of students served by SES in 2009-10 were proficient in mathematics (60.9%) than in reading (43.1%) based on EOG scores in the spring of 2010[6] (see Figure A3). While this pattern was also found in WCPSS grades 3-5, the percentage of SES students proficient in reading and mathematics in 2009-10 was considerably lower than the district overall (31.4 percentage points lower in reading and 23.9 in mathematics).

Figure A3
SES Participants 2009-10 Reading and Mathematics EOG Levels, Grades 3-5



Note: Reading reflects students who received SES in reading and Math reflects students receiving SES in mathematics.
Data Source: 2009-10 End-of-Year Elementary School Student Rosters
Interpretation Example: In 2009-10, 37.9% of served students scored level III on the reading EOG.

Table A2
WCPSS 2009-10 Reading and Mathematics EOG Levels, Grades 3-5

	Reading *N*=33,796	**Mathematics** *N*=33,936
Level IV	27.4%	37.7%
Level III	47.1%	47.1%
Level II	12.7%	10.4%
Level I	12.8%	4.8%

Note: Frequency missing: Reading = 155 and Mathematics = 15
Data Source: 2009-10 End-of-Year Elementary School Student Rosters

[6] Reading and mathematics are shown together; however, note this does not indicated levels are based on similar scales; furthermore, scales based on expert judgment—not equating. Additionally, renorming of reading and mathematics EOGs occurs independently and are preformed on different schedules.

APPENDIX B

Reading and Mathematics EOG Mean Scale Scores for Matched Students

	Grade		SES	Matched	Difference	Significance
Reading	**4** (*n*= 23)	**2008-09**	331.5	332.3	-0.8	***not significant***
		2009-10	340.8	341.6	-0.8	***not significant***
	5 (*n*= 24)	**2008-09**	337.0	337.8	-0.8	***not significant***
		2009-10	342.2	344.3	-2.1	***not significant***
Mathematics	**4** (*n*= 27)	**2008-09**	337.6	338.0	-0.4	***not significant***
		2009-10	346.5	344.3	2.2	***not significant***
	5 (*n*= 30)	**2008-09**	343.7	345.4	-1.7	***not significant***
		2009-10	349.0	351.8	-2.8	***not significant***

Note: Table reflects only students with an EOG scale score for 2008-09 and 2009-10 on the 300 scale; thus, students tested on alternative EOGs are not included in this table.
Data Source: 2009-10 End-of-Year Elementary School Student Rosters