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An Impact and Effectiveness Program Evaluation of NCLB Supplemental Education Services in the Rochester City School District

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An Impact and Effectiveness Program Evaluation of NCLB Supplemental Education Services in the Rochester City School District

Abstract

Supplemental education services (SES) were created within the No Child Left Behind Act (NCLB) of 2001 as a strategy to support student achievement by providing tutoring or other instructional support activities from State-approved vendors outside the regular school day. This program evaluation of the Rochester City School District's SES program in 2005-06 and 2006-07 was framed using the impact evaluation and effectiveness evaluation components of Stufflebeam's CIPP model. The purpose of the study was to determine who participated in SES and to what extent, and to determine the effectiveness of the participation based on the change in New York State standardized assessment results in mathematics and English/language arts (ELA) for SES participants and SES-eligible non-participants. The methodology combined the use of archived quantitative data for students in grades 3 through 8 with qualitative data derived from two focus group sessions with SES instructors. The standardized means for students receiving SES were compared with SES-eligible non-participants. The overall effect size of +0.09 for mathematics and -0.04 for ELA suggests that SES may be a more effective intervention for students with mathematics deficiencies. Results are disaggregated by gender, grade level, race/ethnicity and prior performance level and recommendations for future study are offered.

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An Impact and Effectiveness Program Evaluation of
NCLB Supplemental Education Services in the
Rochester City School District

By

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Submitted in partial fulfillment
Of the requirements for the degree
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Supervised by:

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Dedication

I have been blessed with a convergence of wonderful, selfless, caring people coming together in my life to make this goal a reality. I owe much gratitude to the outstanding faculty at St. John Fisher College for supporting and challenging me. I would also like to thank my colleagues at the Rochester City School District, classmates in the Ed.D. program, my family and friends.

Biographical Sketch

Terry Hofer held teaching positions at the elementary and middle school levels and served as an elementary principal, prior to joining the Rochester City School District in 2002 as the director of grant and program accountability. Mr. Hofer attended the State University of New York at Buffalo from 1989 to 1993 and graduated with a Bachelor of Arts degree in History. He attended St. John Fisher College from 1993 to 1994 to obtain a teaching certificate in elementary education. From 1997 to 1999, Mr. Hofer attended Canisius College and graduated with a Master of Science degree in Education Administration. He came to St. John Fisher College in the summer of 2006 and began doctoral studies in the Ed.D. Program in Executive Leadership. Mr. Hofer pursued his research in program evaluation under the direction of Dr. John Travers and received the Ed.D. degree in 2008.

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I would also like to thank St. John Fisher College for providing a tuition credit to participants from the Rochester City School District. I truly believe this investment in urban education will benefit the entire community for years to come.

Abstract

Supplemental education services (SES) were created within the No Child Left Behind Act (NCLB) of 2001 as a strategy to support student achievement by providing tutoring or other instructional support activities from State-approved vendors outside the regular school day. This program evaluation of the Rochester City School District's SES program in 2005-06 and 2006-07 was framed using the impact evaluation and effectiveness evaluation components of Stufflebeam's CIPP model. The purpose of the study was to determine who participated in SES and to what extent, and to determine the effectiveness of the participation based on the change in New York State standardized assessment results in mathematics and English/language arts (ELA) for SES participants and SES-eligible non-participants. The methodology combined the use of archived quantitative data for students in grades 3 through 8 with qualitative data derived from two focus group sessions with SES instructors. The standardized means for students receiving SES were compared with SES-eligible non-participants. The overall effect size of +0.09 for mathematics and -0.04 for ELA suggests that SES may be a more effective intervention for students with mathematics deficiencies. Results are disaggregated by gender, grade level, race/ethnicity and prior performance level and recommendations for future study are offered.

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Chapter 1: Introduction

Statement of the Problem

Supplemental education services program background. Supplemental education services (SES) is a component of the federal No Child Left Behind Act (NCLB) of 2001. NCLB is a reauthorized version of the original Elementary and Secondary Education Act (ESEA) of 1965, signed by Lyndon Johnson to provide additional financial resources to support the education of students from low-income families. Much of the original intent of NCLB remains the same as the original ESEA of 1965, but the scope has expanded to include a system of accountability, sanctions for failure to meet goals, supplemental education services and school choice for students attending low-performing schools, requirements for teachers to be “highly qualified,” and increased opportunities for parental involvement. The stated purpose of the re-authorized NCLB is “to ensure that all children have a fair, equal, and significant opportunity to obtain a high quality education and reach, at a minimum, proficiency on challenging State academic achievement standards and State academic assessments” (No Child Left Behind Act, 2002-a, p. 15).

Within NCLB, federal funds are earmarked for SES. SES is available to students from low-income families who attend schools identified as “in need of improvement” for two or more years. Schools are identified as “in need of improvement” by failing to make adequate yearly progress (AYP) on annual academic targets set by a state education

agency (See Appendix A for Making AYP in New York State). Supplemental education services are:

Additional academic instruction designed to increase academic achievement of students in schools in need of improvement. These services may include academic assistance such as tutoring, remediation and other educational interventions, provided that such approaches are consistent with the content and instruction used by the local educational agency (LEA) and are aligned with the State's academic content standards. Supplemental education services must be provided outside the regular school day. (U.S. Dept. of Education, 2005, p. 1)

The goals of SES are (a) to ensure that SES participants increase their academic achievement, particularly in reading/language arts and mathematics, (b) to give parents choices in addressing the educational needs of their child, and (c) to offer students extra help (U.S. Dept. of Education, 2005).

Rochester City School District. The Rochester City School District (RCSD) is an urban district located in Rochester, New York. The district serves 33,380 (New York State District Report Card, 2007) students in a city with a population of 215,000 (Census, 2007). The poverty of the region is reflected in the 88.4% of students who qualify for free- or reduced- price lunch program. The four-year graduation rate of the 2002 cohort of incoming freshman was 39%. The 2006-07 student population consisted of 66% African American, 20% Hispanic, 12% Caucasian, and 2% Asian or Native Hawaiian/ Other Pacific Islander (New York State District Report Card, 2007).

The SES program in the RCSD. In the RCSD, parents with children eligible to receive SES are contacted via mail in late September. The mailing includes an

introductory letter, a 25- to 30-page catalog with frequently asked questions, and a profile of each of the vendors contracted to provide services to RCSD children. A registration form is provided in the back of the catalog. The instructions on the registration form direct parents to rank-order their top three vendor choices. Students are assigned to their first choice selection, unless more requests are received than the vendor has capacity to serve. The open enrollment process allows students to begin services at any time between October and March.

Each SES vendor is an option for parental choice only if the vendor entered into a contract with the RCSD. The contracting process occurs during the summer prior to the academic year when the services are to be delivered. Negotiated terms include the rate that vendors are able to charge on a per student per hour basis. This rate, divided into the per pupil allocation established by the U.S. Department of Education for each district, yields the maximum number of instructional hours that vendors will provide to students. Typically, in the RCSD SES program, the hourly rate translates to 30 to 75 instructional hours per student. Instruction may occur any time during the academic year. A typical program may offer instruction to each student after school two times per week for an hour-and-a-half each day.

The instructional approach varies by vendor, but the content must be consistent with New York State academic standards and the vendor's SES application filed and approved by the New York State Education Department (NYSED). Vendor applications are reviewed based on criteria such as fiscal soundness; a demonstrated record of effectiveness in increasing student academic achievement in English language arts and/or mathematics; a high-quality research-based program designed to increase academic

achievement; instruction provided under the general supervision of a New York State certified teacher; and appropriate accommodations and supports for students with disabilities (NYSED, 2007).

More than 60 vendors have been approved by NYSED to deliver services in the RCSD. These include community-based organizations; public schools outside RCSD; local, regional and national private companies; higher education institutions; a Board of Cooperative Educational Services (BOCES) and the RCSD teachers' collective bargaining unit. Although each State-approved vendor is invited to contract with the RCSD each year, the actual number of vendors under contract has ranged from 6 to 18 since SES was first offered in 2002-03. One reason that many of the vendors declined to serve Rochester students may be because they are national or regional vendors without an existing infrastructure in Rochester.

The problem. Although SES has been offered in the RCSD since the 2002-03 academic year, a program evaluation has not been completed to determine the extent to which SES has been successful in meeting its stated goals. Sunderman, Kim, and Orfield (2005) asserted that few researchers have examined the impact of SES on student achievement and “no body of research exists that provides clear and consistent evidence documenting the effects of supplemental education services on learning outcomes for low-income or minority students” (p. 76). Burch (2007) recommended that policy makers, “commission federally funded, comprehensive evaluations to determine (a) to what degree SES may affect student achievement, and (b) to what extent at-risk student populations have access to services” (p. 1).

Theoretical Rationale

In a 2004 publication detailing promising practices in SES, the United States Department of Education Office of Innovation and Improvement stated the following:

The common sense notion that some children need more instructional time than others to master the curriculum is supported by research and theory. If all students are to achieve to grade-level standards, every student must receive the specific support that he or she needs as a learner, including extra time with individual attention and precisely focused instruction. Studies show that students who continue to struggle in school without intervention compound their learning losses into a larger deficit that is difficult to remediate. In contrast, carefully tailored learning interventions can yield quite remarkable and swift progress in overcoming learning obstacles. (p. 2)

The accountability model for New York State standardized testing is shown in Appendix A: Making Adequate Yearly Progress. The extra help provided by SES is designed to improve student achievement on New York State standardized assessments. If a critical mass of students improves their performance levels, then the aggregate score of all students, and the scores of the disaggregated groups, should reach a sufficiently high level that the school would meet or exceed the annual performance targets set by NYSED.

Significance of the Study

The study examined two challenges confronting the RCSD SES program. Taken together, the resulting research questions were designed to provide current data on SES

student participation and the correlating impact, if any, of that participation on student achievement.

The first challenge highlights a gap between the NCLB statutory language which requires all students to demonstrate proficiency on academic learning standards (No Child Left Behind, 2002-a) and the current academic performance of students in the RCSD shown in Table 1.1. In New York State, student academic targets are established by performance levels ranging from one (lowest), to four (highest). These levels correspond to each child's ability to demonstrate proficiency on grade-level specific New York State learning standards. A performance level of one indicates the child is "not meeting learning standards," whereas a performance level of two indicates the child is "partially meeting learning standards." A performance level of three indicates the child is "meeting learning standards," and a performance level of four means the child is "meeting learning standards with distinction" (New York State Education Department, 2006-b, p. 84).

Under NCLB, all students must be "proficient" by the year 2013-14 (No Child Left Behind Act, 2002-a). According to NYSED, Level Three and Level Four students are categorized as "proficient," but the percentage of students in the RCSD currently meeting that standard is well below the goal of 100%. This research study was designed to determine the correlation between student involvement in SES and the change in student achievement on the 2006-07 State assessments.

Table 1.1

Percent of Students Scoring a Level Three or Level Four on the 2005-06 NYS
Standardized Assessments in Mathematics and ELA

Grade	Mathematics	English/ Language Arts
Grade 3	56%	47%
Grade 4	55%	50%
Grade 5	31%	42%
Grade 6	31%	41%
Grade 7	13%	28%
Grade 8	20%	26%

Note. From New York State Report Card, 2007

According to the statutory language of NCLB, closing the achievement gap may be accomplished by providing “additional services that increase the amount and quality of instructional time” (NCLB, 2002-a). For SES to fulfill this role, the services must be utilized. However, the participation rate nationwide of eligible students in NCLB SES was 19% in 2004-05 (U.S. General Accountability Office, 2006).

In the RCSD, students in nine different schools were eligible for SES in 2005-06 and students in eight schools were eligible in 2006-07. In total, approximately 8,370 (25.1%) of the 33,380 students were eligible for SES in 2006-07. Of the 8,370 eligible students, 2,789 (33.3%) enrolled. Of the 2,789 enrolled, 1,962 students (70.3% of those enrolled) actually participated in SES for at least one hour. Approximately 10% of enrolled students attended SES for the maximum number of hours available – which

ranged from 33 to 75, based on individual contracts established between the vendors and the RCSD (Rochester City School District, 2007).

Purpose of the Study

The purpose of the study was to determine if student participation, in Rochester City School District SES programs operated by New York State-approved vendors, correlated to a change in student achievement, as measured by 2005-06 and 2006-07 New York State standardized assessments in mathematics and English/language arts (ELA).

Research Questions

A program evaluation was designed to analyze program outcomes resulting from student participation in SES. The two research questions for the study were (a) To what extent and for whom is involvement in SES correlated with increased academic achievement? and (b) Who participates in SES and to what degree?

Research question #1: SES and achievement. Pre- and post-test results on New York State assessments in mathematics and ELA were compared using a matched set of SES-participants and SES-eligible non-participants, disaggregated by gender, grade and racial/ethnic groups. Because the RCSD did not mandate the use of a separate pre- and post- test for SES, the study relied on scores from the ELA and mathematics tests administered to students in grades three through eight in 2005-06 and 2006-07 as the dependent variable.

Research Question #2: SES and Participation. SES enrollment is voluntary and choosing to attend each scheduled session is the prerogative of the student. Some students enrolled, but never attended more than one session, whereas others fully accessed the available hours. The percent of eligible students who participated for one or

more hours and the average number of hours they participated is reported for each racial /ethnic, gender, and grade level student group in the study in Chapter Four.

Summary

This study of SES was designed to develop a greater understanding of the level of involvement of RCSD students in the program offered through NCLB. This study aimed to understand trends in participation and to determine the effectiveness of the program, as defined by the change in student achievement on New York State standardized assessments in both English/language arts and mathematics in 2005-06 and 2006-07. Chapter Two will examine existing studies of SES and out-of-school-time (OST) programs, as well as program evaluation models and standards that served as a focus for this study. Chapter Three will provide an overview of the quantitative and qualitative methodologies used, including a description of the research participants and the procedures for the data collection and analysis. Chapter Four will present the results of the quantitative data collected and the focus groups. Chapter Five will describe the implications of the findings, the limitations and recommendations for future study.

Chapter 2: Review of the Literature

Introduction and Purpose

This program evaluation examined the effectiveness of the SES program in the RCSD based on changes in student achievement, as evidenced by pre- and post-test scores on New York State standardized assessments. The Joint Committee on Standards for Educational Evaluation defined program as “educational activities that are provided on a continuing basis” and evaluation as “the systematic investigation of the worth or merit of an object” (1994, p. 3).

Fitzpatrick, Sanders, and Worthen (2004) identified five categories of program evaluations: (a) objectives-oriented, (b) management-oriented, (c) consumer-oriented, (d) expertise-oriented, and (e) naturalistic and participant-oriented. Common among each approach was a set of major issues that Nevo (1983) advised and this program evaluation considered:

(1) How is evaluation defined? (2) what are the functions of evaluation (3) what are the objects of evaluation (4) what kinds of information should be collected regarding each object? (5) what criteria should be used to judge the merit and worth of an evaluated object? (6) who should be served by an evaluation? (7) what is the process of doing an evaluation? (8) what methods of inquiry should be used in evaluation? (9) who should do an evaluation? (10) by what standards should evaluation be judged? (p. 117).

A program evaluation of SES could take many forms. Nevo's nine questions were considered as this study was framed. For example, the object of the evaluation was determined to be the entire SES program in the RCSD, as delivered by New York State-approved vendors, and available to students in grades three through eight. This clearly defined object of the evaluation helped to determine the kinds of information to be collected and the criteria that would be used to judge the merit or worth of the program. Specifically, the value of the SES program has been assessed based upon the impact of student involvement on improved student achievement on New York State standardized assessments in ELA and mathematics.

Given the importance of context in determining worth, an evaluation should contain a great deal of descriptive information about the settings in which the evaluation took place (Lincoln and Guba, 1980). Among the vendors contracted with the RCSD to provide SES, Baden Street Settlement, Dial-A-Teacher and Iglesia Services served the most students in 2006-07 (See Appendix B for profiles of the three largest vendors). Respectively, they represent a non-profit agency, a teachers' union and a for-profit company. Detailed descriptions of each of the three largest SES vendors are supplied in Chapter Four to provide a context for examining the findings.

Stufflebeam (1973) suggested that evaluation was "developed for delineating, obtaining, and providing useful information for judging decision alternatives" (p. 129). The CIPP model is a management-oriented evaluation approach with four components – context evaluation to assess the needs assets and problems in an environment, input evaluation to assess the competing strategies, budgets and work plans that feed into a selected approach, process evaluation to monitor, document and assess program activities

and product evaluation. The original product evaluation component of the model has been divided into assessments of impact, effectiveness, sustainability and transportability (Stufflebeam, 2003). Two of these components were utilized in planning this study. Impact evaluation assesses a program's reach to the target population and was used to address the first research question. Effectiveness evaluation assesses the quality and significance of outcomes and served as a framework for addressing the second research question of the study. Sustainability assesses whether or not the contributions of a program have been sustained over time, and transportability assesses whether a program could be successfully adapted elsewhere.

Stufflebeam's CIPP Model Checklist (2003) identified the evaluator as well as stakeholder activities for each evaluation model. The checklist for an impact evaluation included activities such as (a) maintaining a directory of persons and groups served, (b) judging the extent to which the served individuals are consistent with the program's beneficiaries, (c) including the obtained information in a periodically updated program profile, (d) determining the extent to which the program reached an appropriate group of beneficiaries, and (e) assessing the extent to which the program inappropriately provided services to a non-targeted group. Thus, the findings of an impact evaluation may be used to better target services to the desired beneficiaries and to judge the extent to which services are reaching those beneficiaries.

Stufflebeam's (2003) checklist for an effectiveness evaluation includes activities such as (a) interviewing key stakeholders to determine their assessment of the program's positive and negative outcomes; (b) identifying the range, depth, quality, and significance of the program's effect on beneficiaries; (c) identifying the program's full range of

effects, positive and negative, intended and unintended; and (d) identifying the nature, cost, and success of similar programs. According to Stufflebeam, the findings of an effectiveness evaluation may be used to gauge the program's positive and negative effects on beneficiaries, to sort out and judge important side effects, to examine whether program plans need to be changed, and to make a bottom line assessment of the program's success.

The CIPP Model requires evaluators to demonstrate adherence to four important attributes of a program evaluation: (a) utility, (b) feasibility, (c) propriety, and (d) accuracy (Joint Committee on Standards for Educational Evaluation, 1994). Each of the four attributes is then refined into standards, which are written as "should" statements for evaluators. Generally, utility standards guide evaluations so they are informative, timely, influential, and they serve the needs of the targeted audience. Feasibility standards require evaluations to be realistic, prudent, diplomatic, and economical. Propriety standards protect the rights and interests of individuals affected by an evaluation, whereas accuracy standards ensure the reader that findings are technically adequate and that judgments are based on sound information.

The use of an evaluation to measure outcomes is a starting point to improve the implementation of SES in the RCSD. The findings of the evaluation may serve as the basis for a review of specific implementation components of the context, inputs, and process that may have contributed, positively and negatively, to the product. This study is designed to complement, and not supplant, any holistic evaluation of SES in the RCSD.

Topic Analysis

One national study of SES and several program evaluations conducted by state and local education agencies comprise the existing literature on the topic. Each study was unique, but there was a general focus on achievement and participation.

Additionally, several of the studies disaggregated results by vendor, although this was not an intended outcome of this study.

SES national study. In June 2007, the United States Department of Education presented findings about the relationship between participation in the No Child Left Behind Title I choice and supplemental education services options and student achievement (Zimmer, Gill, Razquin, Booker, & Lockwood, 2007). The report featured nine large, urban districts and reported a number of key findings, including one particularly relevant to this study: “On average, across seven districts, participation in supplemental education services had a statistically significant, positive effect on students’ achievement in reading and math” (p. xii). This finding was qualified: “...because these findings are based on a small number of school districts that are not nationally representative, they should not be viewed as representative of the effects of school choice and supplemental education services nationally” (p. xii).

Zimmer et al. (2007) relied on standardized test results from each district. For example, in Los Angeles and San Diego, the study used the California Standards Tests, in Palm Beach, the study used the Florida Comprehensive Assessment Test, and in Chicago, the study relied on student results from the Iowa Test of Basic Skills. The use of standardized tests to track changes in student performance is consistent with the use of New York State standardized test results used in this study of SES in the RCSD.

The percent of SES-eligible participants who chose to access the extra support varied by subgroups. The greatest percent of students participating for any one subgroup was African American students at 16.9%. Next among the subgroups examined in the study were students with disabilities at 14.6%, LEP students at 13.1%, Hispanic students at 11.6%, and Caucasian students at 10.1%.

Zimmer et al. (2007) did not examine the specific number of hours of instruction for each student. Additionally, the study did not consider whether or not the intervention occurred between the dates of the pre- and post- tests. The dates of the intervention are important in New York, because the standardized tests are administered in January for ELA and in March for mathematics, yet students may have attended SES for any portion of the period between November and June. By accurately capturing SES participation data between the pre-test and post-test, this study has been designed to increase the reliability of any correlation between student achievement and SES participation.

Figure 2.1 shows the results of the Zimmer et al. (2007) aggregated findings for seven districts included in their study. These study coefficients were determined using standardized tests unique to each district. The scores were converted to z-scores, prior to comparing treatment and control groups for SES-participants and SES non-participants. At the 5% level of significance, the effect sizes ranged from 0.05 for students with disabilities on the mathematics assessment to 0.18 for students enrolled for two or more years.

Effect sizes are useful for reflecting the magnitude of an effect or the strength of a relationship, rather than solely reporting whether or not a finding was significant. An effect size of 0.20 is considered small, 0.50 is considered medium, and an effect size of

0.80 or higher is considered large (Cohen, 1988). Although the results in Table 2.1 may be viewed as statistically significant, using Cohen’s convention for interpreting effect sizes, the magnitude of the effect for each result is very small.

Table 2.1

Overall Achievement Gains of Student Participation in Title I SES in Seven Districts, Meta-analysis, 2002-03 through 2004-05

Effect	Mathematics (Coefficients)	Reading (Coefficients)
Overall effect	0.09 ^a	0.08 ^a
First-year effect	0.08 ^a	0.08 ^a
Effect of two or more years	0.18 ^a	0.15 ^a
Effects for African American students	0.10 ^a	0.12 ^a
Effects for Hispanic students	0.10 ^a	0.09 ^a
Effects for students with disabilities	0.05	0.17 ^a

^a Indicates significance at the 5 percent level

Note: From Zimmer, R., Gill, B., Razquin, P., Booker, K., & Lockwood, J.R. (2007). State and local implementation of the No Child Left Behind Act: Volume I—Title I school choice, supplemental education services, and student achievement. Washington, DC: RAND.

Los Angeles. The impact of time was considered in a study of SES in the Los Angeles Unified School District (LAUSD) (Rickles & Barnhart, 2007). They examined California Standards Test (CST) data for 216,192 SES-eligible students with valid scores for 2005 and 2006. Of all eligible students, 23,086 applied and 14,759 attended. Among the 11% of eligible students who applied, “the demographic differences were minor

among students grouped by application status, attendance status, and level of attendance” (p. 10). The adjusted standardized scale score for each vendor was displayed as three separate bars – one for low attendance (1% to 49% of program hours), one for medium attendance (50% to 89% of program hours) and one for high attendance (90% to 100% of program hours). The most pronounced difference was identified for elementary math students. Students with high attendance had an adjusted standardized scale score of +0.07, compared to +0.03 for medium attendance and -0.05 for low attendance. After controlling for differences, SES participants had a statistically higher achievement gain on the CST when compared to SES non-participants. This data suggests that LAUSD students who completed a high percentage of the SES program, on average, were more likely to outperform non-participating students and students who completed a lesser percentage of the program hours available.

Georgia. An evaluation of SES in the state of Georgia for the 2005-06 academic year also examined participation rates. An examination of data from 100 school systems and 262 vendors, by The Occupational Research Group (2005), found that 14% of students attended less than 70% of sessions and 33.6% attended 95-100% of scheduled SES sessions. The overall participation rate in Georgia for eligible students in the 2004-05 academic year was 9.3%. Participation was highest for African American students (10.2%), followed by Hispanic students (9.3%), multiracial students (9.6%), Asian (7.9%), and Caucasian students (5.0%). Participation rates of 11.7% for Early Intervention Program (EIP) students, and 11.4% for limited English proficient (LEP) students were above the State average, whereas the participation of students with disabilities (6.5%) and migrant students (4.9%) was below the Georgia state average.

Although there were many reasons for the lack of participation by eligible students who initially requested SES support, but did not receive it, most fell into the following three categories: participation in other academic support programs (24%), students moving outside the district (19%), and a lack of transportation (15%).

New Mexico. An evaluation of SES in New Mexico determined student progress using five criteria (CESDP, 2005): (a) vendor pre- and post- assessments, (b) New Mexico standardized state assessments, (c) student grades, (d) parent evaluations of student progress, and (e) teacher evaluations of student progress. In the final report, students were credited with “progress” if they showed progress in at least 50% of the variables for which data was available. For the 3,781 students included in the study, 59.8% were reported as demonstrating “progress,” 29.4% were reported as demonstrating “no progress,” and “no data” was available for 10.8% of students. According to CESDP:

There was a major discrepancy in the percent of students making progress on the NM Standards Based Assessment (NMSBA) and those reflected in grade and vendor assessments. In mathematics, approximately 80% of students did not demonstrate progress on the NM Standards Based Assessment, but 80% did show progress on vendor assessments and grades. A similar situation exists for reading. (pp. 21-22)

Just 1,718 of 3,781 or 45.4% of students appeared in both the vendor and district databases. Participation data was reported by ethnicity, grade level, special education, and LEP status. Because the data was compared only to SES-enrolled students, and not the larger population of eligible students, it was difficult to determine which groups may have been under- or over-represented. “Attendance data at school and in tutorial sessions

were collected and recorded, but did not contribute to significant differences or indicate any consistent pattern, so these were not utilized” (CESDP, p. 29).

Chicago. The Chicago Public Schools (CPS) evaluated the effectiveness of SES for 55,600 students during the 2005-06 academic year (Chicago Public Schools, 2007). Among the findings, CPS found that “participation in the SES program resulted in a small but significant effect in reading achievement performance compared to other low-income, low-achieving students, attending the same schools” (CPS, p.2). A negligible improvement was noted in mathematics. The largest improvement was identified for both reading and mathematics among younger SES participants.

Achievement results for SES participants in CPS included students in grades 3 through 8 who scored at or below the 50th percentile on the 2005 Iowa Test of Basic Skills (ITBS) and received at least 30 hours of SES prior to taking the 2006 Iowa Test of Basic Skills (ITBS). English language learners were excluded from the study. Results were reported after controlling for prior achievement and demographic differences among race, gender, grade level, and disability groups. Thirty hours was chosen as the threshold for inclusion because this represented the minimum number of hours that any SES vendor was contracted to provide SES in Chicago.

The findings from the two district studies (Chicago and Los Angeles), the two state studies (New Mexico and Georgia) and national study revealed some similarities. Across districts and across demographic groups, a majority of eligible students opted not to take advantage of the free tutoring available under SES. The academic benefit in these studies was most consistently measured by reviewing standardized test scores in the year before SES was offered and in the year that SES occurred. Small and negligible effects

were noted in these studies. The limited number of studies provided further evidence of the need for more research in this area and required examination of literature outside the relatively narrow spectrum of NCLB SES.

OST programs other than SES. SES programs have been in existence since the 2002-03 academic year. Studies conducted by state education agencies and local education agencies have been included in the review of the literature, but peer-reviewed articles on the topic are scarce. Therefore, SES studies have been supplemented in this review of the literature with comparable out-of-school-time (OST) programs. OST is a general category encompassing programs occurring outside the regular school day.

A meta-analysis of 52 OST program studies, by Cohen, Kulik and Kulik (1982), reported that tutored students outperformed their classroom control groups by an effect size of 0.40. This means that four-tenths of a standard deviation change in student academic performance may be explained by the effect of the out-of-school time program. This meta-analysis, though relatively outdated, is indicative of the pre-NCLB evidence of the effectiveness of OST programs. The effect size of 0.40 in the meta-analysis included evidence that higher gains were noted for students in structured OST programs than for students in unstructured OST programs. This distinction may provide insight into why the effect size for OST studies was so much higher than the effect sizes noted to date in studies of SES.

A more recent meta-analysis by Lauer et al. (2004) found that reading and mathematics OST programs can significantly increase the achievement of low-achieving or at-risk students by an average of one-tenth of a standard deviation compared to those students who do not participate in OST programs. This finding was the result of the

researchers' review of 371 studies of OST programs, 53 of which were incorporated into the review.

Lauer et al. (2004) categorized the number of hours of instruction students received in each of 53 math and reading OST programs. The effect sizes for math are shown in Table 2.2 and the results for reading are displayed in Table 2.3. For each, the level of significance was determined by comparing the average of the effect sizes of all moderators considered in the study. Significance was identified when the lower and upper bounds were either greater than or less than zero.

Effect sizes for math were highest for programs 46 to 75 hours in duration. Effect sizes for reading were highest for programs 44 to 84 hours in duration. The effect size for each was 0.20 or higher, which is significant, but relatively small using Cohen's convention (1988). Taken together, the findings indicate that OST programs have the greatest impact when students receive at least 44 hours of instruction. By comparison, some SES programs are less than 44 hours, whereas others are more than 44 hours. SES vendors typically are not required to offer a minimum number of hours.

Table 2.2

Duration as a Moderator of Effect Sizes of Math Results of OST Programs

Number of hours	Effect size	Lower bound	Upper bound	# of studies
Less than 46	+0.06	-0.01	+0.13	4
46-75	+0.26 ^a	+0.11	+0.41	4
76-100	+0.22 ^a	+0.13	+0.32	4
Greater than 100	+0.11	-0.02	+0.25	3

^a Indicates significance at the 5 percent level

Table 2.3

Duration as a Moderator of Effect Sizes of Reading Results of OST Programs

Number of hours	Effect size	Lower bound	Upper bound	# of studies
Less than 44	+0.02	-0.14	+0.18	7
44-84 hours	+0.25 ^b	+0.16	+0.34	7
85-210 hours	+0.19 ^b	+0.06	+0.32	5
Greater than 210 hours	-0.01	-0.11	+0.09	3

^b Indicates significance at the 1 percent level

Note. Tables 2.2 and 2.3 are adapted from Lauer et al. (2004). The effectiveness of out-of-school-time strategies in assisting low-achieving students in reading and mathematics: A research synthesis. Mid-Continent Research for Education and Learning.

The studies included in the meta-analysis were categorized based on the duration of the programs, rather than the average number of hours attended, if any, by students in each program. Very few studies have documented the number of students who dropped out of out-of-school time (OST) programs and the reasons they dropped out (Lauer et al., 2004).

One exception, a study by Fashola and Cooper (1999), identified transportation, high cost, and the lack of sibling care arrangements as the three primary obstacles to the participation of African American students in OST programs. They also found a strong relationship between the availability of transportation and the ability of a program to meet the needs of its targeted population. In SES programs, districts are expressly forbidden from using Title I funds set-aside for SES to pay for related transportation costs (U.S. D.O.E., 2005).

Summary and Conclusion

The review of the literature informed the two research questions designed to determine the extent to which SES participation is correlated with increased academic achievement and regarding evidence on who participates in SES and to what degree. Studies in OST and SES show that additional time outside the regular school day has yielded statistically significant gains in student achievement, although the effects for SES participation on achievement tend to be relatively small. For both OST and SES studies, there is evidence that increased time spent in SES and OST programs is correlated to statistically significant results.

Student participation levels in SES programs indicate that African American and Hispanic students are accessing services at rates higher than Caucasian students.

Participation tends to be reported generally, with little or no data in most studies on the number of hours students were engaged in SES programs, particularly as reported by disaggregated groups. Chapter Three introduces the research design for the program evaluation.

Chapter 3: Research Design Methodology

General Perspective

A program evaluation was used to judge the effectiveness of SES in the RCSD. The merit or worth of the program was evaluated in an outcomes-based, summative evaluation. This study used an ex post facto design to collect archived quantitative data for all children eligible to receive SES in the RCSD in 2005-06 and 2006-07. Matched treatment and control groups of students were established with SES participants and SES-eligible non-participants. Concurrently, the study employed focus groups with SES instructors to collect qualitative evidence of program effectiveness.

A concurrent nested mixed methods strategy (Creswell, 2003) was used to analyze changes in student achievement on New York State ELA and mathematics assessments administered during the 2005-06 and 2006-07 academic years and input from SES instructors in the field to determine (a) To what extent and for whom does involvement in SES correlate with increased academic achievement? and (b) Who participates in SES and to what degree?

Qualitative data was used to enrich the study with the perspective of the teachers responsible for delivering the program at the point of service, although the quantitative methodology predominated in the study. The qualitative method was used to collect details about the potential correlation between SES involvement and achievement which otherwise would not have emerged. Similarly, the qualitative data collection provided the opportunity to discover information about students who may be more or less likely to

engage in SES, but would not become evident during a strictly quantitative examination. For both components, the intent of the study sought to allow any resulting theory to emerge from the data collected in this qualitative phase.

A mixed method approach was chosen due to the large number of potential intervening variables in this study and because the CIPP Model requires the engagement of multiple perspectives, as well as the use of both quantitative and qualitative methods (Stufflebeam, 2003). For example, the quantitative pre-test and post-test instruments are administered one year apart, yet the academic intervention may occur for a period of a few weeks or months during the course of that year. The focus group participants were provided the opportunity to share insights about the content and instructional delivery in order to inform the quantitative findings as to whether or not SES participation is correlated to standardized assessment data. Additionally, this component was designed to enrich and extend the numerical data points provided as part of the quantitative analysis.

Research Context

The study evaluated SES in the RCSD. The district has 39 elementary schools and 19 secondary schools. The schools are primarily organized as grade k through 6 elementary schools and grade 7 through 12 secondary schools. In 2005-06, students in nine schools were eligible to receive SES, including two elementary schools and seven secondary schools. In 2006-07, students in eight RCSD schools were eligible, including two elementary schools and six secondary schools.

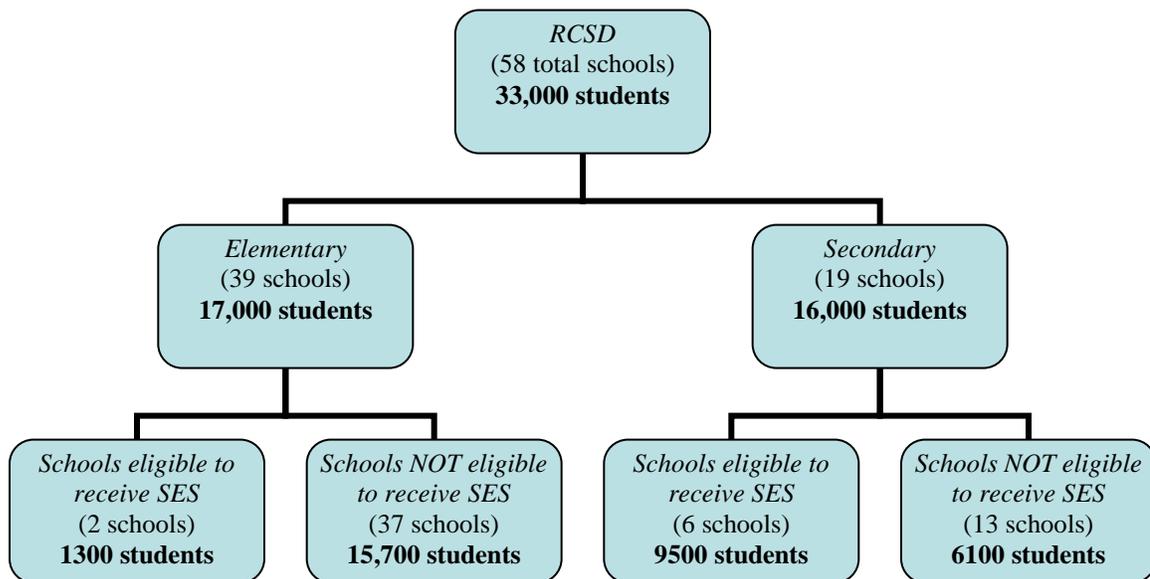


Figure 3.1. RCSI Students and Schools Eligible for SES services, 2006-07.

Note: Figures are estimates adapted from the Rochester City School District web-site, www.rcsdk12.org.

Student eligibility in SES was initially determined based on the school improvement status under NCLB. As shown in Figure 3.1, only about 7.6% (1300 out of 17,000) of elementary students were eligible to receive SES, whereas 59.4% (9,500 out of 16,000) of secondary students were eligible. A total of 10,800 students (1300 elementary + 9500 secondary) attended an eligible school. The study design further narrowed this group to determine suitable research participants for matched treatment and control groups.

Matching is an experimental procedure in which subjects are divided by means other than lottery, and the resulting groups are considered, for the identified purpose, to be of equal merit or ability. This is accomplished by identifying critical attributes that will be held constant in both the treatment and the control groups. A control group is a

group as closely as possible equivalent to the experimental group and which is exposed to all the conditions of the investigation except the program being studied (Joint Standards, 1994).

Each of the SES participants enrolled in an academic program occurring outside the school day. The SES programs were approved by the New York State Education Department (SED), based on a review of each vendor's application. The programs ranged from one-to-one tutoring to large group instruction. Prior to approval by SED, the content was reviewed for alignment to New York State Learning standards and RCSD curricula. In the RCSD, for each student enrolled, the vendor was responsible for producing a student improvement plan and periodic progress reports for the parents and for the RCSD. Because all vendors were not required to use a common pre-test and post-test at the beginning and end of services, the results from a consistent instrument for comparing student growth across vendors in this manner was not attainable.

Research Participants

Phase one, research question #1: Achievement. Prior to conducting an analysis of the data, matched treatment and control groups were defined. The treatment and control group pools were initially matched on three criteria. First, students were matched based on the SES-eligibility of the school they attended. To be eligible for SES, students must have attended a school designated for two years or more under No Child Left Behind as "in need of improvement." Second, SES-eligible students included in the study all were members of a from low-income family, as determined from the student's free or reduced-price lunch eligibility. Third, students in the treatment and control groups were required to have available pre- and post-test data. The matched pools were limited to include only

students who received SES during a “treatment period” defined by the 2005-06 pre-test date and the 2006-07 post-test date.

The pre-test refers to the completion of a grade-appropriate New York State standardized assessment in ELA and/or mathematics in grades 3 through 7 in 2005-06, and the post-test refers to the completion of a New York State standardized assessment in ELA and/or mathematics in grades 4 through 8 in 2006-07. Whereas the tests were administered in grades three through eight, the eighth grade students in 2005-06 were ninth grade students in 2006-07 and therefore did not take grade three through eight standardized tests. Similarly, the third grade students in 2006-07 would have been second graders in 2005-06 and therefore, would not have available pre-test data.

Once the overall matched treatment and control group pools were identified, unique matched samples were created based on gender, racial/ethnic background, and grade level. Racial/ethnic groups were limited to include African American, Hispanic and Caucasian students because these three groups comprise up 98% of the RCSD student population (New York State District Report Card, 2007). Figure 3.2 shows the origin of the treatment and control groups.

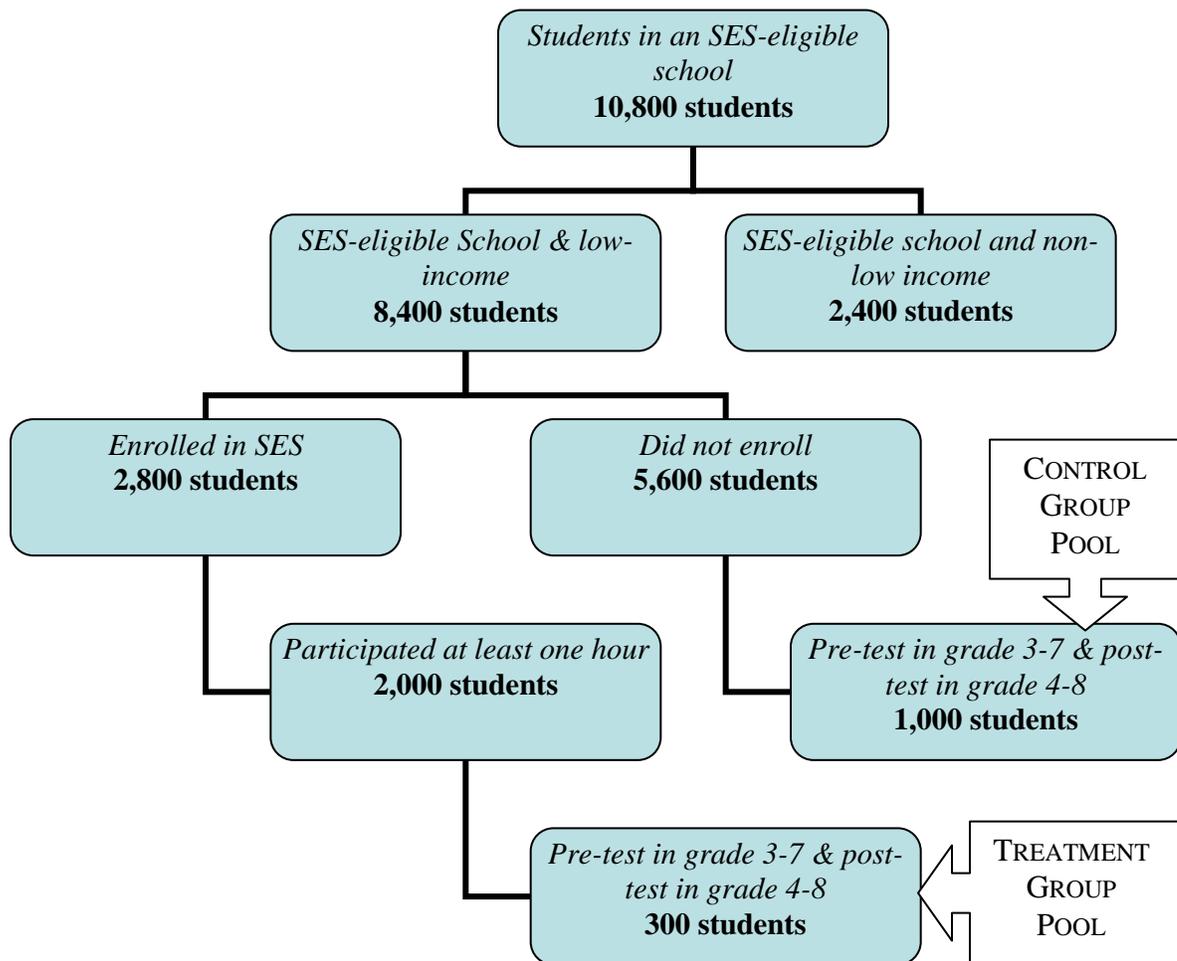


Figure 3.2. Origin of Treatment and Control Groups

Note: Figures are estimates adapted from the Rochester City School District web-site, www.rcsdk12.org.

The treatment period covered one calendar year, but spanned two academic years. To be included in the study, the students must have received SES from January 2006 through June 2006 or from November 2006 through January 2007. This period included approximately the last half of the 2005-06 academic year and the first half of the 2006-07 academic year. The matched samples have been designed to increase the likelihood that participants in the control group and the treatment group were the subject of similar and

undetermined intervening variables. However, it should not be assumed that effects such as participation in the RCSD extended day program, summer school, varying effectiveness of classroom teachers, and the student's home learning environment were comparable.

Both the treatment and the control groups included students who (a) were from low-income families, (b) were in grades 3 through 7 in 2005-06, (c) were promoted to grades 4 through 8 in 2006-07, (d) were in schools eligible to receive SES, and (e) had pre-test and post-test scores available. The control group included students who did not enroll in SES in 2005-06 or 2006-07. By contrast, the treatment group included students enrolled in SES who received at least one hour of SES instruction between the pre-test date during the 2005-06 academic year and the post-test date during the 2006-07 academic year.

Students were excluded from both the treatment and the control group if they were administered a NYS assessment in mathematics or ELA for a grade level other than their existing grade level. For example, a 6th grade pre-test given to a 6th grade student in year one, followed by a 7th grade post-test given to the same student as a 7th grader. Some students may have taken a test that was not grade appropriate, but rather aligned to the student's existing skill level. For example, a 6th grade student may have taken the 4th grade pre-test in year one and the 5th grade post-test in year two. The pre- and post-test results for these students were excluded from the study. Also excluded were students who were retained at the same grade level for two consecutive years. For example, a 5th grade student who took the 5th grade test in year one, if retained, would take the 5th grade test in year two as well. These students were excluded because they had two years of

instruction at the same grade level, whereas students included in the study had one year of instruction at each grade level.

When all criteria were taken into consideration, the number of students and the mean achievement scores were calculated for all students in the aggregate and for each group. An effort was made to identify a minimum n-size that would produce a manageable number of findings, maintain a focus on the most predominant groups in the RCSD, and limit the possibility for erratic findings derived from a small number of students. Although there is variability among researchers, the minimum acceptable sample size for a correlational research study is 30 (Fraenkel and Wallen, 2003). Based on the pre-study estimates shown in Figure 3.3, this threshold was projected to be attainable for some of the identified groups. To provide more comprehensive findings, the study reported the outcomes after aggregating the data into larger samples such as entire grade levels, race/ethnicity, or gender.

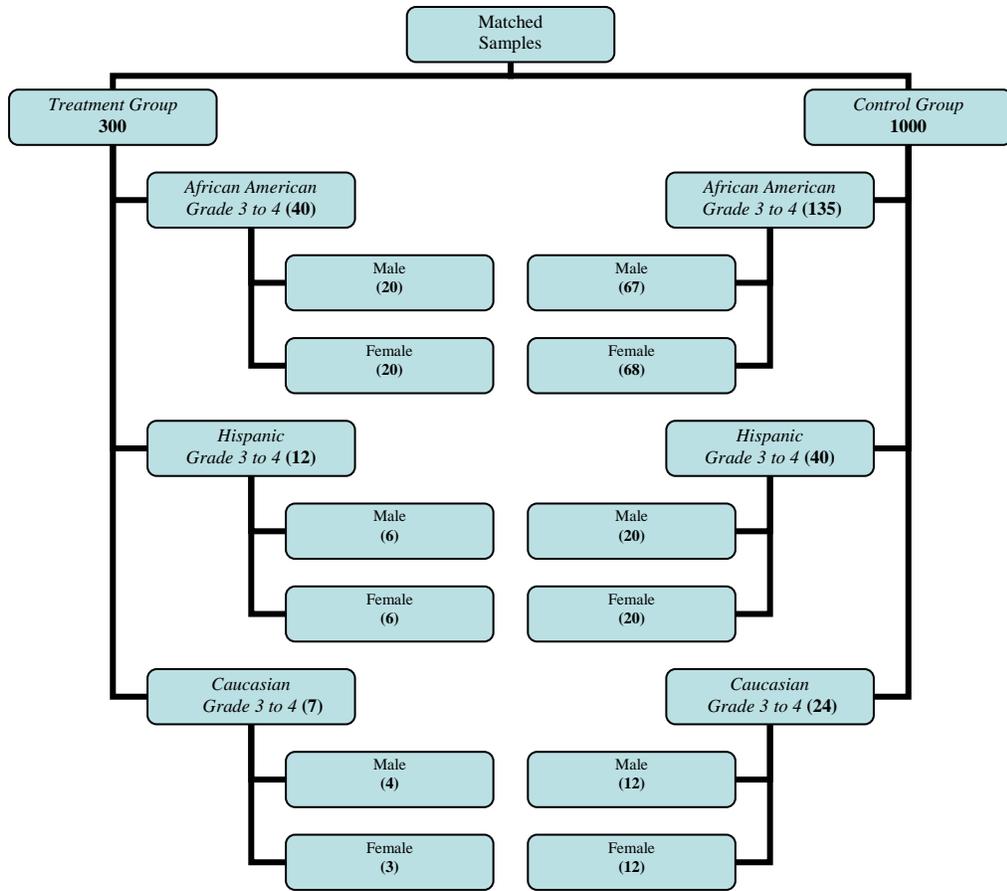


Figure 3.3. Matched Subgroups with Estimated n-size based on RCSD Demographics.

Note: Repeat for students in grades 4 to 5, 5 to 6, 6 to 7 and 7 to 8. Figures are adapted from the Rochester City School District web-site, www.rcsdk12.org.

Phase two, research question #2: Participation. Descriptive statistics were used to address the second research question: Who participates in SES and to what degree? Data tables were created to allow comparison of all students by categorical variables: vendor, school, regular education vs. special education, limited English proficient/English language learner (LEP/ELL) vs. non-LEP/ELL, racial and ethnic groups, and students with prior achievement levels meeting New York State standards in English/language arts and math versus students with prior achievement levels not meeting New York State standards in English language arts or math. For each group, the data set included the total number of eligible students, the number of enrolled students, the number of participating students with at least one hour of tutoring, the mean number of hours for students in each group, and the standard deviation.

The qualitative phase of the study occurred concurrently with the quantitative analysis. This data gathering utilized focus groups, made up of SES instructors, to seek qualitative data to address the research questions. Afterwards, the reactions of the focus group participants were triangulated with the emerging findings from the quantitative analysis to provide deeper understanding and a greater context for the recommendations.

Given the one year time period between the pre-test and the post-test, many intervening variables could have impacted student achievement. In instances where the quantitative data suggested a correlation between SES participation and achievement, an effort was made to determine whether or not there was supporting or conflicting data from the instructors in the focus groups. The use of focus groups to triangulate the data was intended to more accurately report the impact and effectiveness of the program, than would have been possible with the exclusive use of quantitative data.

Focus groups offer one option for pursuing answers to questions which may not be discernible through quantitative data analysis alone. Surveys were contrasted to focus groups in a study by Ward, Bertrand, and Brown (1991). Survey and focus group results were compared among matched topic areas for 60 variables. The two methods were (1) highly similar on 30% of 60 variables tested, (2) similar, but with focus groups providing more information on 42% of the variables, (3) similar, but with surveys providing more information on 17% of the variables, and (4) dissimilar for 12% of the variables.

Fern (1982) considered the value of focus groups versus the value of individual interviews. He determined that each focus group produced approximately 60% to 70% of the ideas that would have been generated in an individual interview. Fern also found that two eight-person focus groups could generate as many ideas as ten individual interviews. In addition to this efficiency, Morgan and Krueger (1993) also noted that focus groups offer the ability to probe the level of consensus or disagreement on a particular viewpoint.

The planned focus groups with SES instructors were designed to include no more than the recommended 5-10 participants per group (Cottrell, 2005). Approximately 500 instructors provided SES in the RCSD program during the treatment period. All instructors in the 2006-07 SES database, maintained within the EnrolledDU software, were initially identified and ranked by the number of instructional hours each provided. Initially, the list was limited to include only those instructors who ranked in the top 50 for hours provided.

To contact the prospective participants, an initial notice was sent to all 50 instructors by email for RCSD employees or by regular mail for non-district employees.

Instructors who responded were contacted and placed in a focus group. Initially, up to four focus groups of 5 to 10 participants were planned. Due to the limited response, the opportunity to participate was extended to the 100 most active instructors. Based on the number of responses from instructors, two focus groups were formed. Three instructors participated in the first group and four instructors in the second group.

An effort was made to plan focus groups so they would approximate the composition of student participation in SES. For example, if Provider ABC Tutoring had 25% of the market share, then an attempt was made to secure approximately 25% of the focus group participants from that vendor. If there were more respondents than needed from a particular vendor, then a randomization process was planned to include every x^{th} person on the list. That measure did not prove necessary due to the low number of respondents. It was initially contemplated that the help of the administrators of the SES programs would be used to solicit additional participants. However, this approach was not used because of the concern that participants would be inhibited from providing accurate responses because of their employer's knowledge of their participation. Instead, instructors were contacted directly by phone until confirmation of participants from at least three vendors was secured for each focus group.

Many options exist for how to approach focus group data collection. Morgan (1992) recommended that the researcher assess the advantages and disadvantages of standardization of questions and procedures with regard to the goals of the project. Another model suggested organizing the focus group around a set of discussion guidelines designed to develop a deeper understanding of the concepts (Knodel, 1993) or a series of questions, each of which serves a distinct purpose (Krueger, 1994). Although

either approach may be used to collect the desired data, Krueger (1994) recommended that discussion guidelines should be reserved for experienced moderators because of the impact that a subtle change in questions can have on the data that is collected. Also, the less structured discussion can make data analysis across groups more challenging.

Krueger (1994) recommended that focus groups should be organized around different types of questions. Such a framework may include an opening question to get to know the characteristics of the participants, introductory questions to foster conversation about the topic, transition questions to allow participants to think about the topic in a broader scope, key questions which serve as the focal point of the analysis, and ending questions which give closure to the experience and offer participants the opportunity to share final thoughts. The focus group planning template in Appendix C has been patterned after this approach. The open-ended questions, developed in alignment with Krueger's recommendations, had the intent of collecting data to develop theory related to the impact and effectiveness of SES. The open-ended nature of the questions "does not fix attention on any specific aspect of the stimulus situation or of the response; it is, so to speak, a blank page to be filled in by the interviewee (Merton, Fiske and Kendall, 1990, p 15).

Instruments

The data on each of the tutoring sessions occurring during the 2005-06 and 2006-07 academic years was extracted from the Enroll EDU web-based system. The RCSD contracted with Alves Educational Consulting Group (AECG), Ltd. to utilize the Enroll EDU supplemental education services web-based management tool. Enroll EDU was created to log individual student tutoring sessions and to create corresponding detailed

invoices in a manner that was auditable and defensible. The data recorded for each tutoring session included (a) the vendors, (b) the instructor, (c) the students, (d) the date, (e) the duration, (f) whether or not the instructor was a New York State certified teacher, and (g) the cost of the session. Vendors were also required to complete learning plans at the start of services as well as periodic progress reports to be submitted to parents at regularly scheduled report card periods. The data entered may be considered reliable to the extent that vendors, found misrepresenting data in Enroll EDU, risked termination of their contract with the RCSD in addition to removal from the list of New York State approved vendors.

The data collected from vendors on the tutoring sessions was merged with data from the web-based RCSD Chancery student management system. The RCSD began using the web-based Chancery student management system at the start of the 2006-07 academic year to maintain all relevant student information in one location. For new students, data is inputted by RCSD staff at the time the student is enrolled. For existing students, the student information was copied into Chancery from the previous mainframe student information system. One use of Chancery, is to provide student data for a particular group of students for the purpose of completing a program evaluation. For this study, data retrieved from Chancery included (a) student school, (b) grade, (c) ethnicity, (d) disability status, (e) limited English proficient/ English language learner status, (f) standardized test results from math in 2005-06 and 2006-07, and (g) the standardized test results in English/ language arts in 2005-06 and 2006-07. For the standardized test results, data included a raw score, a scale score, and a performance level. Information

between the two systems was merged by combining all data associated with each unique student identification number.

The identity of each student was protected by re-coding the RCSD student identification number with a separate and distinct student identification number used for the study. For each student, the data set included all the variables identified in Appendix D. The numerals in Appendix D, next to each of the criteria, have been included to allow for transition of string data to numeric data points when converting from Microsoft Excel to SPSS. For example, to code the students with disabilities criterion, general education students were coded with a '0' and students with disabilities were coded with a '1.'

The instruments used to determine the change in student achievement were the New York State standardized tests in mathematics and English/language arts (ELA). The validity and reliability documentation for these tests is available in a pair of technical reports issued by the New York State Department of Education (New York State Department of Education, 2006a, New York State Department of Education, 2006b). Content validity demonstrates the extent to which the test measures what it purports to test. The content validity for the New York State mathematics and ELA tests was verified by an independent study of the alignment between the curriculum and the test. The tests also demonstrate content validity because they were designed by educators tasked with developing questions matched to the curriculum (New York State Department of Education, 2006a, New York State Department of Education, 2006b).

Construct validity for the New York State assessments is designed to show what scores meant and what kinds of inferences they supported (New York State Department of Education, 2006b, p.22). For the New York State Math tests, the reliability

coefficients for the overall population ranged from 0.89 to 0.96, and the reliability coefficients were over 0.80 for all subgroups (New York State Dept. of Education, 2006-a, p. 22). For the New York State ELA tests, the reliability coefficients for the overall population ranged from 0.82 to 0.89, and the reliability coefficients were over 0.80 for all subgroups except the subgroup representing grade five students in Low Need districts (New York State Dept. of Education, 2006-b, p. 20). Because RCSD is not a Low Need (i.e. – wealthy) district, the exception noted for grade five students on the ELA tests will not negatively impact the proposed study. The construct validity was based on high levels of internal consistency, a factor analysis procedure to assess dimensionality for selected subgroups, and the inclusion of questions that were deemed free from bias (New York State Dept. of Education, 2006-b, p. 25).

Data Analysis

Quantitative data. For the first research question, descriptive statistics for overall student achievement data as well as achievement data for each identified group was reported in table format. Initially, data was organized in an Excel spreadsheet with unique student identification numbers listed in the first column. Next, the corresponding data points in Appendix D were entered into the columns beside each student. The data from Excel was imported to SPSS (Statistics Package for the Social Sciences) to generate descriptive statistics such as the *n*-size, the mean, and the standard deviation for each identified group. The descriptive statistics were reported to provide information about student attendance time and student achievement.

To determine whether a correlation existed, the independent and dependent variables were entered into SPSS. Next, all standardized test scores at each grade level

and for each year were converted to z -scores. This step was necessary because of the variance in scale score ranges associated with each performance level at each grade level, as depicted in Table 3.1 and Table 3.2.

Table 3.1

Scale Score Ranges Associated with each Performance Level for Grades 3-8,

Mathematics

Grade	Level 1	Level 2	Level 3	Level 4
3	470-623	624-649	650-702	703-770
4	485-621	622-649	650-701	702-800
5	495-618	619-649	650-698	699-780
6	500-615	616-649	650-695	696-780
7	500-610	611-649	650-692	693-800
8	480-615	616-649	650-700	701-775

In each case, 649 and 650 represented the difference between student performance which met or exceeded State learning standards and student performance below State learning standards. The range of scale scores varies for each grade level and by subject area.

Table 3.2

Scale Score Ranges Associated with each Performance Level for Grades 3-8, ELA

Grade	Level 1	Level 2	Level 3	Level 4
3	475-615	616-649	650-719* (for 2008 only)	720-780* (for 2008 only)
4	430-611	612-649	650-715	716-775
5	495-607	608-649	650-710	711-795
6	480-597	598-649	650-704	705-785
7	470-599	600-649	650-711	712-790
8	430-601	602-649	650-714	715-790

Note. From New York State Education Department, <http://www.emsc.nysed.gov/irts/ela-math/ela-math-08/2008ELAScaleScoretoPerformanceLevels.html>

To compensate for this variance, a z -score was used throughout the study. Using a z -score, each student's performance on a state assessment could be represented as one score among a sample of all scores within the subject area and at the student's grade level. All z -scores for each sample isolated by grade level and subject area had a mean of zero and a standard deviation of 1.0. Using this format, it is immediately evident whether an individual student z -score or the mean z -score of a specific group of students is greater than or less than the population being studied. The resulting z -score also reveals the number of standard deviations an individual z -score or the mean z -score of a specific group of students within a larger population is from the mean of the entire population.

To determine if the comparison of the treatment and control group mean z -scores produced a statistically significant result at $p < 0.05$, a t -test for independent means was planned. The results of a t -test for independent means, as conducted using SPSS, could

reveal the correlation coefficient, r , for each independent variable on the dependent variable of SES participation. Instead, the effect size was determined by calculating Cohen's d . The formula used the pre- and post-test change in mean z -scores for the treatment group minus the pre- and post-test change in mean z -scores for the control group, divided by the pooled standard deviation of the treatment and control groups. The resulting effect size allowed for easier comparison to earlier studies of SES and out-of-school time programs.

Qualitative data. Many options were available for collecting and analyzing the focus group data. The focus group sessions were digitally recorded and transcribed by a court stenographer. The proposed study planned to use the transcript to cluster participant responses to focus group questions on focus group overview grids (Knodel, 1993). According to Krueger (1994), the grid technique requires the use of topic headings and session identifiers to record a summary of the discussion for each session. Specific notations may be included in the grid to designate the characteristics of the speaker or the speaker's emphasis on a point. Afterwards, the key words and phrases from the transcriptions may be reassembled in a manner that groups like responses.

Summary of the Methodology

The concurrent nested mixed methods approach used archived quantitative data collected from the 2005-06 and 2006-07 academic years. SPSS was used as a tool to determine if there was evidence to support a correlation between student participation in SES and student achievement on New York State ELA and mathematics standardized assessments for students in grades 3 through 8.

The qualitative component of the study used data collected and analyzed from focus groups with SES instructors. Focus group sessions occurred with a sample of instructors from the pool of instructors with the greatest number of hours teaching in the program. A series of open-ended questions was designed to draw out information that could be triangulated with the quantitative data. It was envisioned that this analysis could potentially lead to the creation of a theory about the phenomenon being studied.

Conclusion

The entire study was framed as a program evaluation using Stufflebeam's (2003) CIPP program evaluation model. The goal of the study was to collect and analyze relevant data to answer two research questions about the impact and effectiveness of the SES program in the RCSD. The analysis and findings of the methodology are presented in Chapter Four.

Chapter 4: Results

Supplemental education services provide an opportunity for students attending low-performing schools to receive tutoring outside the regular school day. The program has been funded by NCLB since the 2002-03 academic year, but little is known about its impact and effectiveness on student achievement. A mixed methods design was employed as part of the program evaluation of SES in the RCSD. The findings respond to the two research questions and provide baseline data from which to evaluate the program's effectiveness.

The vendors. The point of service for the SES program involves tutors working directly with students. The three vendors serving the greatest number of students during the treatment period were Dial-A-Teacher, Iglesia Services and Baden Street Settlement. The critical attributes of each are discussed to provide a context for the study. Each vendor is required to deliver services consistent with the New York State curriculum, but relatively little information is available about the specific nature of the curriculum or the instructional delivery methods.

Dial-A-Teacher is a not-for-profit organization affiliated with the Rochester Teachers' Association. The program offers 45 hours of tutoring in a student-to-teacher ratio not to exceed 4-to-1. Every tutor hired by Dial-A-Teacher is a Rochester City School District instructor during the regular school day. All of the tutoring sessions provided by Dial-A-Teacher occur within the home school of the student.

The second largest vendor during the treatment period was Iglesia Services. Iglesia is similar to Dial-A-Teacher in the use of small group instruction. However, the top two vendors differ in that Iglesia is a for-profit vendor and hires tutors to deliver SES who may or may not possess a valid New York State teaching credential. The tutoring sessions may occur within a school building, at an Iglesia tutoring center or at a community-based location.

Baden Street Settlement is a not-for-profit, community-based organization. Supplemental education services are provided within schools, at Baden Street facilities or in community-based locations. Baden Street does not require their tutors to possess a valid New York State teaching credential. Like Dial-A-Teacher and Iglesia, Baden Street uses small group instruction for the delivery of SES.

The research questions. The findings presented in this chapter address the two research questions: (a) To what extent and for whom is involvement in SES correlated with increased academic achievement? and (b) Who participates in SES and to what degree? Within this chapter, the research questions have been answered in reverse order. The first section provides data on the research question addressing SES and student participation, whereas the second section responds to the research question on SES and achievement. Each section is organized with an initial display of the quantitative data, followed by the complementary qualitative data from the focus groups.

Quantitative Data: SES and Participation

Overall participation. Student participation in SES is voluntary. The opportunity is available to students from low-income families if they are enrolled in schools identified as “in need of improvement” for two or more years. Although the additional academic

support is offered to all eligible students, only a fraction of eligible students take advantage of the service. Of the 2,704 SES-eligible students, 586 participated between the March, 2006 administration of the New York State mathematics assessment and the March, 2007 mathematics assessment. Students participating during this “mathematics treatment period” averaged 21.3 hours of SES. For the period between the January, 2006 administration of the New York State Assessment in ELA and the January, 2007 administration of the New York State ELA assessment, 461 received at least one hour of SES. On average, participants during the ELA treatment period received 20.2 hours of SES. Because independent providers have latitude in providing the service, the instruction provided between the mathematics or ELA pre- and post-test dates does not necessarily indicate that the SES instruction was specific to ELA or mathematics. Although not a focus of this study, some indication of student needs being addressed may be available on the learning plans developed by providers for each student.

Table 4.1 shows the percentage (*P*) of students receiving 1 to 15, 16 to 30, 31 to 45 and 46+ hours of SES. The intervals were selected to provide comparable data to the Lauer et al. (2004) study, which reported that out-of-school-time programs yielded significant effects when students received a minimum of 46 hours of mathematics or 44 hours of reading.

Table 4.1

SES Participation by Number of Hours

Number of hours	Mathematics treatment period		ELA treatment period	
	<i>n</i>	<i>P</i>	<i>n</i>	<i>P</i>
46+	48	8.2%	33	6.8%
31-45	106	18.1%	78	16.1%
16-30	177	30.2%	135	28.0%
1-15	255	43.5%	237	49.1%

Gender. The average hours of SES participation by gender is shown in Table 4.2, along with the distribution of SES-eligible male and female students, by percent participating. The total number of SES-eligible male ($n=1373$, 50.8% of all eligible students) and female ($n=1331$, 49.2% of all eligible students) students was comparable.

Table 4.2

Student Participation in SES by Gender

	Female	Male
Mathematics treatment (<i>n</i>)	283	303
Mathematics control (<i>n</i>)	1048	1070
Mathematics hours	21.2	21.3
ELA treatment (<i>n</i>)	245	238
ELA control (<i>n</i>)	1086	1135
ELA hours	19.2	21.1

During the mathematics treatment period, the percent of SES-eligible males participating in SES (22.1%) was slightly higher than the percent of SES-eligible females (21.3%). For the ELA treatment period, the percent of participating SES-eligible females (18.4%) was slightly higher than for males (17.3%), but male SES participants attended an average of 1.9 additional hours. The variance in hours among groups is relatively small. However, the variance between the percent of students who choose to participate in each group versus those who are eligible is quite large. This data indicates that roughly 80% of students eligible to receive free tutoring did not take advantage of the opportunity.

Racial /ethnic groups. A contributing factor for schools attempting to make adequate yearly progress (AYP) under NCLB is the performance of students by race/ethnicity. If a sufficient number of students from each racial/ethnic subgroup do not reach proficiency on State assessments, the school may be labeled as “in need of improvement” and be subject to the sanctions identified in NCLB. Table 4.3 provides participation-related data on racial/ethnic groups.

Student participation data by race/ethnicity, as represented in Table 4.3, depicts participation rates of SES-eligible students during the math treatment period which were markedly higher for African American students (23.0%) and Hispanic students (23.1%) than Caucasian students (7.8%). This disparity between African American and Caucasian students is consistent with a similar finding obtained by Zimmer et al. (2007) between African American students (16.9%) and Caucasian students (10.1%). During the treatment period, which covered one calendar year, the table also indicates that

participating Caucasian students attended SES for approximately seven to eight more hours than African American or Hispanic students.

Table 4.3

Student Participation in SES by Three Largest Racial/Ethnic Groups

	African American	Caucasian	Hispanic
Mathematics treatment (<i>n</i>)	437	15	122
Mathematics control (<i>n</i>)	1461	178	406
Mathematics hours	21.0	28.4	21.6
ELA treatment (<i>n</i>)	358	14	97
ELA control (<i>n</i>)	1540	178	425
ELA hours	20.3	28.5	19.2

Grade level. SES is available to eligible students from kindergarten through grade twelve. Table 4.4 represents the number of students enrolled at each grade level, and the percentage of eligible students who completed at least one hour of SES during the treatment periods for mathematics and ELA.

Table 4.4 displays three key findings. First, elementary students in grades 3 to 6 were more likely to participate in SES than students in grades 6 to 8. For the mathematics treatment period, participation rates ranged from a high of 37.7% at grade 4 to 5, to a low of 16.6% for students in grade 6 to 7. Despite the higher participation rates at the elementary level, the average number of hours was higher for secondary students. Third, the number of SES participants was much higher at the secondary level due to the number of eligible schools.

Table 4.4

Student Participation in SES by Grade Level

	Grade	Grade	Grade	Grade	Grade
	3 to 4	4 to 5	5 to 6	6 to 7	7 to 8
Mathematics treatment (<i>n</i>)	30	40	39	217	260
Mathematics control (<i>n</i>)	72	66	84	1093	798
Mathematics average hours	16.8	17.8	19.9	19.7	23.9
ELA treatment (<i>n</i>)	25	34	32	147	245
ELA control (<i>n</i>)	77	72	91	1163	813
ELA average hours	15.5	16.5	21.5	23.8	24.2

Other participation criteria. In addition to data provided on race/ethnicity, gender and grade level, descriptive data on students' prior achievement level was examined to provide a deeper understanding of who participates in SES. An initial performance level of 4 indicates the student was "meeting learning standards with distinction," a 3 indicates the student was "meeting learning standards," a 2 indicates the student was "partially meeting standards," and a 1 indicates the student was "not meeting learning standards" (New York State Education Department, 2006-b, p. 84). Schools receive full credit toward AYP for students performing at performance levels 3 and 4, and partial credit for students performing at performance level 2. No credit is awarded for students scoring at performance level 1. Table 4.5 displays the performance level of SES-eligible students on the 2005-06 administration of the New York State mathematics

and ELA assessments. The results for students in grades 3 through 7 on these assessments represent the pre-treatment achievement levels.

Table 4.5

SES-eligible Students by 2005-06 Performance Level

Performance level	Mathematics		ELA	
	<i>N</i>	<i>P</i>	<i>N</i>	<i>P</i>
Level 4	47	1.7%	56	2.1%
Level 3	645	23.9%	947	35.0%
Level 2	1184	43.8%	1369	50.6%
Level 1	828	30.6%	332	12.3%

In total, 25.6% of participating students were meeting or exceeding learning standards in mathematics prior to enrolling in SES. For ELA, 37.1% of participating students were meeting or exceeding learning standards for ELA prior to enrolling. NCLB does not preclude these students from requesting and receiving SES even though the scores of students performing at performance level 3 and 4 did not negatively contribute to the AYP calculation of the school. There were 692 SES-eligible students who were already achieving at or above the mathematics standard based on the March 2006 assessment. These figures are subject to the limitations of the study and include only those students in grades 3 through 7 during the 2005-06 academic year. For ELA, 1003 SES-eligible 3rd through 7th grade students scored at or above the ELA standard based on the January 2006 pre-test.

By contrast, 62.9% of ELA student scores and 74.4% of mathematics student scores were at performance level 1 or 2. The scores of these students negatively

contributed to the AYP calculation of their respective schools. Realizing the goal of SES as an academic intervention to help students improve academically and to help schools make AYP is possible only if those students performing below the standard take advantage of the service. The percentage of eligible students who chose to access SES is shown in Table 4.6, displayed by students' prior performance level on 2005-06 mathematics and ELA pre-tests. The table also includes the participation rate of students with disabilities and LEP/ELL students.

Table 4.6

Student Participation in SES by 2005-06 Performance Level on Mathematics and ELA Pre-tests, by Special Education Status and by LEP/ELL Status

	Mathematics			ELA		
	Treat- ment <i>n</i>	Control <i>n</i>	<i>P</i>	Treat- ment <i>n</i>	Control <i>n</i>	<i>P</i>
Performance level 4, '05-'06	5	42	10.6%	6	50	10.7%
Performance level 3, '05-'06	105	540	16.3%	123	824	13.0%
Performance level 2, '05-'06	263	921	22.2%	272	1097	19.9%
Performance level 1, '05-'06	213	615	25.7%	82	250	24.7%
Special education	100	334	23.0%	85	348	19.6%
Regular education	486	1784	21.4%	398	1872	17.5%
LEP/ELL	15	47	24.2%	13	49	21.0%
Non-LEP/ELL	571	2071	21.6%	470	2172	17.8%

For the mathematics and ELA treatment periods, students with a prior performance level of 1 participated at the greatest level, followed by level 2, level 3 and level 4. This indicates that the students with the greatest academic need, as evidenced by prior performance on NYSED learning assessments, are the students most likely to take advantage of the opportunity. By contrast, 75.7% of students scoring at level 1 in mathematics were eligible to receive free tutoring, but did not access it. Similarly, 80.9% of students scoring at the lowest level in ELA were eligible to receive free tutoring, but did not participate. The results for students with disabilities and LEP/ELL students revealed a similar level of participation, even though these students present unique learning challenges. Accessing the additional instructional time does not require agreement by a committee on special education, yet many special education parents chose not to enroll their children. It is unclear from the findings whether this was an active choice made by parents, or whether they were not aware of the opportunity.

Qualitative Data: SES and Participation

The qualitative data collection occurred concurrently with the quantitative data analysis. Focus groups were conducted on June 3, 2008 and June 5, 2008. The first session included three SES instructors and the second session included four SES instructors. For each session, three distinct vendors were represented. Each session lasted approximately two hours and used the Focus Group Planning Template in Appendix C as a guide.

A court stenographer was present to record the comments in real-time during the focus group session. The precision of this transcript was lost when a set of unfortunate circumstances prevented access to the transcript. Subsequently, a relatively poor-quality

audio cassette was used to reconstruct the comments of participants for inclusion in the study. Despite this limitation, several useful comments emerged from the focus group participants to better inform the impact and effectiveness of SES in the RCSD. The responses from focus group participants related to the research question on student participation have been grouped around: (a) the number of hours of participation, and (b) the impact of relationships.

Number of hours of participation. When asked, “for which students is SES most helpful?” participants in the focus groups unanimously agreed on “regular attenders.” One tutor said, “... attendance is very important... any kid that comes on a regular basis is definitely going to succeed.” Much discussion centered on the number of hours necessary to yield measurable growth on the standardized assessments. Participants sometimes spoke in terms of the number of times per week, or the percentage of sessions the students would need to attend. When they were prompted to reveal a gut feeling about the minimum number of hours necessary to achieve the desired effect, estimates ranged from 30 hours to 50 hours. One tutor said, “I like the idea of 50... those students are really excelling when they come regularly.”

The impact of relationships. Though the feedback from focus group participants was limited to seven total participants and dependent on a transcript that was not verbatim, the responses from participating tutors provided limited evidence that student-to-student and teacher-to-student relationships were an important part of the contextual SES experience. Remarks from some of the participants suggested that the relationships fulfilled a role in helping meet the social and emotional needs of the students. Tutor statements also addressed the importance of the teacher-to-student relationship.

Comments included, "... because you see them a couple times a week" and "they talk about problems they're having with other teachers..." Another tutor who worked primarily with one student at a time noted, "It's one-on-one. They relate more and feel more comfortable in this situation."

In other cases, the relationship theme was focused on the students' interactions with one another. One participant noted that, "students build relationships. They look forward to seeing each other twice a week. They see each other in the halls and they normally wouldn't know each other." Another, "... they don't have the fear of giving a wrong answer in a small group." One tutor said, "[the students] have a friendly competition with each other... I can still get that in a classroom, but it's easier [in tutoring]."

Quantitative Data: SES and Achievement

Findings addressing the research question on student participation provided detailed information about the students who accessed SES. The second research question asks, "To what extent and for whom is involvement in SES correlated to increased student achievement?" The findings in this section report on evidence assembled from archived data collected during the 2005-06 and 2006-07 academic years. The change in student performance on New York State assessments in ELA and mathematics from 2005-06 to 2006-07 serves as the basis for determining if students who participated in SES experienced greater increases on standardized test performance than their peers who did not participate.

The results for all achievement-related findings are displayed in the corresponding tables as an effect size. Calculating the effect sizes required several steps. For each set

of matched samples analyzed, the mean z -score for the treatment group and mean z -score for the control group were calculated using pre-test and the post-test student z -scores. The difference in the mean z -scores for the pre- and post-test for the treatment group and the difference in the mean z -scores for the control group have been reported in each table as Δz . The difference between the Δz for the control group was subtracted from the Δz for the treatment group and divided by the pooled standard deviation. The resulting quotient is the effect size, displayed as Cohen's d .

A positive effect size indicates the treatment may have a constructive effect on the dependent variable, whereas a negative effect size indicates the treatment may have a detrimental effect on the dependent variable. The further the number is from zero in either direction, the stronger the relationship. Because the calculation was derived from z -scores for each student with a mean of zero and a standard deviation of one, the resulting Cohen's d may be characterized in terms of standard deviations. For example, an effect size of 0.5 would indicate the average z -score of students in the treatment group was 0.5 standard deviations higher than the average z -score of students in the control group.

Using Cohen's convention, an effect size of 0.2 is small, an effect size of 0.5 is considered medium and an effect size of 0.8 is large. Rather than using a t -test for independent means to determine significance at the $p < 0.05$ level as contemplated in the proposal, a 95% confidence interval is used. The use of a 95% confidence interval allows for analysis of a range of scores. If the entire range of effect sizes is above or below zero, there is at least a 95% probability that the noted effect size is the result of the treatment.

It is possible that the effect could be statistically significant, but unremarkable when compared against Cohen's convention for evaluating the magnitude of effect sizes. Because the confidence interval depicts a range of effect sizes that could occur if the study were replicated with the same population, it may be useful to consider whether or not the upper or lower limits of the confidence interval include the 0.2, 0.5 or 0.8 effect sizes that Cohen's convention uses as guideposts.

Achievement and hours of participation. The chosen procedure for determining the effectiveness of the intervention is initially reported in Tables 4.7 and 4.8 for students with varying hours of participation. Confidence intervals for all calculated effect sizes in Tables 4.7 through 4.18 are provided in Appendix F.

The findings in Table 4.7 indicate a pattern in which more hours of SES participation yielded a smaller effect size. By comparison, the Lauer et al. (2004) study yielded an effect size of +0.06 for less than 46 hours of instruction and an effect size of +0.26 for 46 to 75 hours of instruction in mathematics.

The Lauer et al. (2004) meta-analysis of out-of-school-time programs yielded an effect size of +0.02 for programs with less than 44 hours of instruction and an effect size of +0.25 for programs with 45 to 84 hours of instruction. Students with 45 to 84 hours of participation in Out-of-School-Time programs scored one-quarter of a standard deviation greater than non-participants. Similar evidence of increasing student performance with increased hours of SES did not emerge among RCSD SES participants. As shown in Table 4.8, the opposite was found and the lowest effect size during the ELA treatment period was noted for the population of students with 46 or more hours.

Table 4.7

Overall Change in Mathematics Achievement by Hours of Participation

Number of hours of SES instruction	Treatment		Control		Effect size <i>d</i>
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	
1 to 15 hours	(<i>n</i> =246)		(<i>n</i> =2067)		+0.11
March 2006	-0.23	0.91	0.09	0.91	
March 2007	-0.15	0.88	0.08	0.89	
Δz	0.08	0.81	-0.01	0.81	
16 to 30 hours	(<i>n</i> =175)		(<i>n</i> =2067)		+0.11
March 2006	-0.08	0.87	0.09	0.91	
March 2007	0.00	0.89	0.08	0.89	
Δz	0.08	0.83	-0.01	0.81	
31 to 45 hours	(<i>n</i> =108)		(<i>n</i> =2067)		+0.01
March 2006	-0.13	0.80	0.09	0.91	
March 2007	-0.13	0.87	0.08	0.89	
Δz	0.00	0.99	-0.01	0.81	
46 or more hours	(<i>n</i> =42)		(<i>n</i> =2067)		-0.02
March 2006	0.39	0.86	0.09	0.91	
March 2007	0.36	0.87	0.08	0.89	
Δz	-0.03	0.71	-0.01	0.81	

Table 4.8

Overall Change in ELA Achievement by Hours of Participation

Number of hours of SES instruction	Treatment		Control		Effect size <i>d</i>
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	
1 to 15 hours					
	(<i>n</i> =230)		(<i>n</i> =2185)		-0.01
January 2006	-0.15	0.86	0.05	0.93	
January 2007	-0.14	0.94	0.07	0.90	
Δz	0.01	0.85	0.02	0.75	
16 to 30 hours					
	(<i>n</i> =130)		(<i>n</i> =2185)		-0.05
January 2006	-0.11	0.85	0.05	0.93	
January 2007	-0.13	0.90	0.07	0.90	
Δz	-0.02	0.73	0.02	0.75	
31 to 45 hours					
	(<i>n</i> =81)		(<i>n</i> =2185)		-0.03
January 2006	-0.13	1.25	0.05	0.93	
January 2007	-0.13	1.30	0.07	0.90	
Δz	0.00	0.83	0.02	0.75	
46 or more hours					
	(<i>n</i> =32)		(<i>n</i> =2185)		-0.15
January 2006	0.45	1.18	0.05	0.93	
January 2007	0.37	0.95	0.07	0.90	
Δz	-0.09	0.74	0.02	0.75	

Student participation in SES by African American and Hispanic students was higher than SES participation by Caucasian students. However, once participating, Caucasian students averaged more hours of tutoring. Table 4.9 displays the results of SES participation for racial/ethnic groups on student achievement during the mathematics treatment period.

Table 4.9

Overall Change in Mathematics Achievement by Race/Ethnicity

Race/ ethnicity	Treatment		Control		Effect size <i>d</i>
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	
African American					
	(<i>n</i> =430)		(<i>n</i> =1443)		+0.17
March 2006	-0.18	0.84	0.03	0.90	
March 2007	-0.07	0.88	0.00	0.89	
Δz	0.11	0.82	-0.03	0.83	
Caucasian					
	(<i>n</i> =15)		(<i>n</i> =178)		-0.54
March 2006	0.53	0.91	0.47	0.87	
March 2007	0.19	0.68	0.49	0.68	
Δz	-0.34	0.59	0.02	0.67	
Hispanic					
	(<i>n</i> =122)		(<i>n</i> =406)		-0.13
March 2006	-0.02	0.98	0.09	0.90	
March 2007	-0.10	0.94	0.13	0.85	
Δz	-0.07	0.93	0.04	0.83	
Overall					
	(<i>N</i> =571)		(<i>N</i> =2067)		+0.09
March 2006	-0.12	0.88	0.09	0.91	
March 2007	-0.06	0.89	0.08	0.89	
Δz	0.06	0.85	-0.01	0.81	

The overall effect size for SES participants, defined as participating in one or more hours of SES, between the mathematics pre-test and post-test period, was +0.09.

This finding was consistent with the effect size of +0.09 obtained for SES participants in mathematics in the national study of SES conducted by Zimmer et al. (2007).

The observed difference in the means resulted in a positive effect size for African American students that approached the +0.20 threshold for a small effect using Cohen's convention. The gains for African American SES participants were offset by negative effects for Caucasian and Hispanic students. In particular, the effect size for Caucasian

students was more than one-half of a standard deviation from the mean. Using Cohen’s convention, this finding suggests that SES participation had a medium-sized detrimental effect on New York State mathematics assessments for this population. Although the result was based on a comparatively small treatment sample size of 15 students, the calculated 95% confidence interval from -0.84 to -0.44 suggests that the finding was not the result of chance for this group. The findings for SES treatment and control group participants for ELA are shown in Table 4.10.

Table 4.10

Overall Change in ELA Achievement by Race/Ethnicity

Race/ ethnicity	Treatment		Control		Effect size
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>d</i>
African American					
	(<i>n</i> =348)		(<i>n</i> =1540)		-0.01
January 2006	-0.12	0.91	0.00	0.92	
January 2007	-0.11	0.93	0.02	0.88	
Δ <i>z</i>	0.01	0.78	0.02	0.76	
Caucasian					
	(<i>n</i> =14)		(<i>n</i> =178)		+0.17
January 2006	0.06	0.97	0.37	0.93	
January 2007	0.18	0.82	0.38	0.88	
Δ <i>z</i>	0.12	0.63	0.00	0.69	
Hispanic					
	(<i>n</i> =97)		(<i>n</i> =425)		-0.08
January 2006	-0.06	0.99	0.05	0.92	
January 2007	-0.12	1.01	0.05	0.94	
Δ <i>z</i>	-0.06	0.94	0.00	0.76	
Overall					
	(<i>N</i> =473)		(<i>N</i> =2185)		-0.04
January 2006	-0.10	0.93	0.05	0.93	
January 2007	-0.10	0.94	0.07	0.90	
Δ <i>z</i>	-0.01	0.81	0.02	0.75	

The impact of student participation in SES on student achievement on New York State ELA assessments was also not significant. The average z-score of SES participants and non-participants remained relatively unchanged with or without the intervention. Within racial/ethnic groups, the only positive effect size was noted for Caucasian students. Although this effect size approached the level where it could be characterized as “small” using Cohen’s convention, the figure represented a relatively small treatment group with 14 students. The positive effect size among 14 Caucasian students in ELA was in sharp contrast to the -0.54 effect size attained for the same group of students in mathematics. Among African American SES participants, there was no evidence of increased student achievement as a result of the targeted intervention.

Gender. The overall change in mathematics achievement by gender is represented in Table 4.11 and the change in ELA achievement by gender is represented in Table 4.12. The effect sizes for each were determined based on all SES-eligible students.

Table 4.11

Overall Change in Mathematics Achievement by Gender

Race/ ethnicity	Treatment		Control		Effect size <i>d</i>
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	
Female					
	(<i>n</i> =279)		(<i>n</i> =1027)		+0.13
March 2006	-0.14	0.87	0.05	0.89	
March 2007	-0.02	0.91	0.07	0.86	
Δz	0.12	0.81	0.02	0.79	
Male					
	(<i>n</i> =292)		(<i>n</i> =1040)		+0.05
March 2006	-0.10	0.89	0.13	0.92	
March 2007	-0.10	0.87	0.09	0.93	
Δz	0.00	0.88	-0.04	0.84	

A comparison of treatment and control group means for males and females produced positive effect sizes for each. The effect size for females of +0.13 and the corresponding confidence interval of 0.03 to 0.17 was positive, but unremarkable. The overall effect size resulted from an achievement gap for female SES-participants and non-participants that was 0.19 standard deviations (-0.14 minus 0.05) in March 2006 to 0.09 standard deviations (-0.02 minus 0.07) in March 2007. Table 4.12 demonstrates the effects of SES participation on ELA achievement for male and female students.

Table 4.12

Overall Change in ELA Achievement by Gender

Race/ ethnicity	Treatment		Control		Effect size
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>d</i>
Female					
	(<i>n</i> =241)		(<i>n</i> =1076)		
January 2006	-0.04	0.90	0.10	0.90	+0.01
January 2007	0.05	0.91	0.17	0.86	
Δ <i>z</i>	0.09	0.78	0.08	0.74	
Male					
	(<i>n</i> =232)		(<i>n</i> =1109)		-0.09
January 2006	-0.16	0.95	0.00	0.95	
January 2007	-0.26	0.95	-0.04	0.92	
Δ <i>z</i>	-0.11	0.82	-0.04	0.76	

The data indicates no effect of participation in SES on student achievement for female participants. A negative effect size was noted for male students, with the lower bound of the 95% confidence interval (-0.20 to -0.05) approaching a “small” effect using Cohen’s convention.

Female SES participants averaged 0.14 standard deviations lower on the ELA pre-test than non-participants in the control group. A comparable 0.16 standard deviation differential was noted for male students. This data suggests that male and female students with greater academic needs in ELA were more likely to participate in SES than their higher performing peers. However, this initial pre-test achievement gap for males and females was not eliminated after the intervention of SES within the specified treatment period.

Grade levels. Tables 4.13 and 4.14 compare the achievement of SES participants and non-participants by grade level. Each grade level appears in the tables as “ x to $x+1$ ” because the pre-test was given during the 2005-06 academic year and the post-test was given during the 2006-07 academic year. For the 6 to 7 grade level, students were in elementary school for the latter part of grade 6, and then transitioned to a secondary school for the beginning of grade 7 at the start of the new school year.

Data on student participation in SES produced a small effect size of +0.27 for students in grade 3 to 4. Thus, the youngest students in this study of RCSD students achieved the greatest gains in mathematics, just as the Chicago Public Schools (2007) study found the highest achievement gains for the youngest students in ELA and mathematics.

Table 4.13

Overall Change in Mathematics Achievement by Grade Level

Grade level 2005-06 to 2006-07	Treatment		Control		Effect size <i>d</i>
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	
<hr/>					
Grade 3 to 4					
	(<i>n</i> =30)		(<i>n</i> =71)		+0.27
March 2006	-0.31	0.79	0.16	1.02	
March 2007	-0.18	0.94	0.13	0.93	
Δz	0.13	0.61	-0.03	0.60	
Grade 4 to 5					
	(<i>n</i> =39)		(<i>n</i> =65)		-0.07
March 2006	-0.05	0.85	0.10	0.97	
March 2007	-0.08	1.01	0.12	0.88	
Δz	-0.03	0.63	0.02	0.79	
Grade 5 to 6					
	(<i>n</i> =38)		(<i>n</i> =83)		+0.08
March 2006	-0.11	0.75	0.11	1.02	
March 2007	-0.06	1.02	0.10	0.87	
Δz	0.05	0.71	-0.01	0.79	
Grade 6 to 7					
	(<i>n</i> =213)		(<i>n</i> =1073)		+0.06
March 2006	-0.21	0.92	0.07	0.92	
March 2007	-0.15	0.89	0.08	0.91	
Δz	0.06	0.97	0.01	0.87	
Grade 7 to 8					
	(<i>n</i> =251)		(<i>n</i> =775)		+0.14
March 2006	-0.04	0.89	0.11	0.86	
March 2007	0.03	0.83	0.07	0.87	
Δz	0.07	0.81	-0.04	0.76	

At each grade level, the mean *z*-score on the student pre-test was lower for the treatment group than the control group. This difference, which was the greatest for students in grade 3 to 4, suggests that the average SES participant entered the program with greater academic needs than the average SES non-participant. In four of the five grade levels observed, the difference between the pre- and post-test *z*-scores narrowed

more for SES participants than non-participants. The results for ELA are shown in Table 4.14.

Table 4.14

Overall Change in ELA Achievement by Grade Level

Grade level 2005-06 to 2006-07	Treatment		Control		Effect size
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>d</i>
Grade 3 to 4					
	(<i>n</i> =25)		(<i>n</i> =77)		-0.08
January 2006	-0.29	0.98	0.09	1.00	
January 2007	-0.33	1.06	0.10	0.96	
Δ <i>z</i>	-0.05	0.52	0.01	0.78	
Grade 4 to 5					
	(<i>n</i> =33)		(<i>n</i> =72)		-0.12
January 2006	0.05	0.86	-0.01	1.06	
January 2007	0.03	0.98	0.05	0.87	
Δ <i>z</i>	-0.02	0.68	0.06	0.70	
Grade 5 to 6					
	(<i>n</i> =32)		(<i>n</i> =90)		-0.08
January 2006	0.18	0.96	-0.05	1.01	
January 2007	0.15	0.98	-0.01	0.94	
Δ <i>z</i>	-0.03	0.71	0.03	0.73	
Grade 6 to 7					
	(<i>n</i> =144)		(<i>n</i> =1143)		-0.03
January 2006	-0.18	0.92	0.04	0.92	
January 2007	-0.18	0.89	0.06	0.88	
Δ <i>z</i>	0.00	0.88	0.02	0.76	
Grade 7 to 8					
	(<i>n</i> =239)		(<i>n</i> =803)		-0.01
January 2006	0.09	0.93	0.07	0.89	
January 2007	0.09	0.95	0.08	0.91	
Δ <i>z</i>	0.00	0.82	0.01	0.74	

At each grade level, student participation in SES resulted in a negative effect size.

Unlike the findings for mathematics, SES participants during the ELA treatment period had a lower pre-test score than non-participants in just two of the five grade levels. Also

unlike the mathematics findings by grade level, and inconsistent with the findings from SES participants in the Chicago Public School (2007) study, there was no evidence of greater gains in ELA achievement from the youngest SES participants.

Grade, race/ethnicity and gender matched samples. The proposed methodology aimed to create matched samples using SES-eligible participants and non-participants. The matches were initially constructed by including all students with pre- and post-test data from a given grade, and one grade above, who attended an SES-eligible low-performing school, and who were eligible to receive a free- or reduced-price lunch. Additional criteria matched students by grade level, ethnicity and gender. In total, 60 matched samples were examined to determine whether the treatment group size was 30 or more. The number of combinations was based on two subjects (mathematics and ELA), times five grade levels (3rd to 4th, 4th to 5th, 5th to 6th, 6th to 7th and 7th to 8th), times three ethnicities (African American, Caucasian and Hispanic), times two genders (male and female). The treatment sample size of each of the 60 possible combinations is shown in Appendix E. Treatment sample sizes with 30 or more students have been included in Table 4.15.

Four of the five matched samples compared for mathematics yielded positive results. Small, positive effects were noted for grade 6 to 7, female, African American students. Significant and positive effect sizes were noted for grade 6 to 7 and grade 7 to 8 African American females. The grade 7 to 8 African American female student group ($n=108$) started out 0.13 standard deviations below the control group mean on the pre-test and surpassed the control group on the post-test. The mean z -score decreased for the 30 Hispanic males receiving SES, whereas the mean z -score value for 80 Hispanic males in

the control group remained stable. The matched samples for ELA are shown in Table 4.16.

Table 4.15

Overall Change in Mathematics Achievement by Gender, Race/Ethnicity and Grade Level for Matched Samples with Treatment Sample Sizes of at least 30

Matched samples	Treatment		Control		Effect size
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>d</i>
Grade 6 to 7, male, African American	(<i>n</i> =87)		(<i>n</i> =372)		+0.14
March 2006	-0.18	0.83	0.05	0.90	
March 2007	-0.12	0.86	-0.01	0.92	
Δz	0.06	0.82	-0.06	0.86	
Grade 6 to 7, male, Hispanic	(<i>n</i> =30)		(<i>n</i> =80)		-0.25
March 2006	0.01	1.13	0.09	0.88	
March 2007	-0.23	0.93	0.10	0.81	
Δz	-0.24	1.12	0.01	0.97	
Grade 6 to 7, female, African American	(<i>n</i> =67)		(<i>n</i> =392)		+0.34
March 2006	-0.32	0.86	0.01	0.93	
March 2007	0.00	0.80	0.03	0.89	
Δz	0.32	0.82	0.03	0.85	
Grade 7 to 8, male, African American	(<i>n</i> =83)		(<i>n</i> =282)		+0.12
March 2006	-0.03	0.72	0.05	0.85	
March 2007	0.04	0.73	0.03	0.90	
Δz	0.07	0.64	-0.02	0.82	
Grade 7 to 8, female, African American	(<i>n</i> =108)		(<i>n</i> =255)		+0.25
March 2006	-0.13	0.89	0.00	0.86	
March 2007	0.01	0.91	-0.04	0.82	
Δz	0.14	0.87	-0.05	0.73	

Table 4.16

Overall Change in ELA Achievement by Gender, Race/Ethnicity and Grade Level for Matched Samples with Treatment Sample Sizes of at least 30

Matched samples	Treatment		Control		Effect size
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>d</i>
Gr. 6 to 7, male, African American	(<i>n</i> =52)		(<i>n</i> =407)		-0.10
January 2006	-0.26	0.95	-0.09	0.90	
January 2007	-0.38	0.80	-0.14	0.86	
Δz	-0.12	0.80	-0.04	0.78	
Gr. 6 to 7, female, African American	(<i>n</i> =51)		(<i>n</i> =412)		+0.22
January 2006	-0.19	0.84	0.08	0.92	
January 2007	0.06	0.83	0.16	0.82	
Δz	0.25	0.81	0.08	0.76	
Gr. 7 to 8, male, African American	(<i>n</i> =80)		(<i>n</i> =294)		-0.06
January 2006	-0.17	0.95	0.02	0.91	
January 2007	-0.29	1.00	-0.05	0.88	
Δz	-0.12	0.84	-0.07	0.76	
Gr. 7 to 8, female, African American	(<i>n</i> =102)		(<i>n</i> =270)		-0.04
January 2006	-0.01	0.90	0.05	0.88	
January 2007	0.05	0.92	0.13	0.91	
Δz	0.06	0.78	0.09	0.78	

A small positive effect size was noted for Grade 6 to 7 African American students. The effect sizes of the remaining three groups with treatment sample sizes of 30 or more were negative and very small. Unlike mathematics, where positive effect sizes were noted in four of the five groups, the results for ELA revealed negative effect sizes in three of the four matched samples. Tables 4.17 and 4.18 examine achievement

data sorted by student performance levels on the ELA and mathematics pre-tests administered in 2005.

Table 4.17

Overall Change in Mathematics Achievement by Prior Performance Level

Prior performance level	Treatment		Control		Effect size
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>d</i>
Prior performance level 4	(<i>n</i> =4)		(<i>n</i> =36)		+0.48
March 2006	2.00	0.34	2.07	0.28	
March 2007	1.60	0.62	1.33	0.75	
Δz	-0.40	0.75	-0.74	0.70	
Prior performance level 3	(<i>n</i> =105)		(<i>n</i> =535)		+0.03
March 2006	0.93	0.49	1.02	0.44	
March 2007	-0.55	0.88	0.63	0.81	
Δz	-0.38	0.86	-0.40	0.76	
Prior performance level 2	(<i>n</i> =263)		(<i>n</i> =917)		-0.07
March 2006	0.11	0.40	0.13	0.40	
March 2007	0.05	0.73	0.12	0.72	
Δz	-0.06	0.68	-0.01	0.71	
Prior performance level 1	(<i>n</i> =199)		(<i>n</i> =579)		+0.07
March 2006	-1.02	0.59	-0.97	0.55	
March 2007	-0.56	0.79	-0.58	0.77	
Δz	0.46	0.88	0.40	0.82	

The results in Table 4.17 were mixed and indicated both positive and negative effect sizes. After applying the 95% confidence intervals to each result, only the result for performance level 2 was above zero, and therefore statistically significant. Test scores indicating a prior performance level of 2 indicate the students were performing below the State standard for mathematics prior to receiving SES. The lack of evidence of a positive effect for students in this category suggests the intervention may not be

working as intended. By contrast, the effect size for students with a prior performance level of 4 was +0.48, but the treatment sample size of four is not sufficient to draw meaningful conclusions.

Table 4.18

Overall Change in ELA achievement by Prior Performance Level

Prior performance level	Treatment		Control		Effect size <i>d</i>
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	
Prior performance level 4	(<i>n</i> =6)		(<i>n</i> =42)		+0.66
January 2006	2.32	0.23	2.18	0.29	
January 2007	1.63	0.60	1.10	0.54	
Δz	-0.69	0.65	-1.08	0.58	
Prior performance level 3	(<i>n</i> =123)		(<i>n</i> =821)		-0.13
January 2006	0.94	0.45	0.86	0.42	
January 2007	0.64	0.81	0.64	0.70	
Δz	-0.30	0.78	-0.21	0.68	
Prior performance level 2	(<i>n</i> =271)		(<i>n</i> =1094)		-0.17
January 2006	-0.24	0.42	-0.30	0.42	
January 2007	-0.24	0.75	-0.17	0.71	
Δz	0.00	0.74	0.12	0.70	
Prior performance level 1	(<i>n</i> =73)		(<i>n</i> =228)		-0.04
January 2006	-1.49	0.51	-1.59	0.52	
January 2007	-0.99	0.74	-1.06	0.69	
Δz	0.50	0.83	0.53	0.80	

Negative effect sizes were calculated for students with ELA prior performance levels of 1, 2 and 3. The only exception was for the six students in the treatment group with an ELA prior performance level of four. The -0.17 effect size for 271 students in the treatment group was based on evidence that the students started out with a mean *z*-score that was -0.24 standard deviations below the mean and attained an identical mean *z*-

score -0.24 standard deviations below the mean on the post-test one year later. These numbers indicate that students in the treatment group showed no growth from 2006 to 2007, whereas their peers in the control group made positive gains, even though the average delta z -score remained negative.

Qualitative Results: SES and Achievement

Two focus groups were held with SES instructors on June 3, 2008 and June 5, 2008 to gather additional data on the SES program in the RCSD. Three participants were represented at the focus group on June 3rd and four participants were represented on June 5th. Each of the instructors participating in the focus group discussions was among the 100 instructors with the greatest number of hours of tutoring billed during the 2006-07 academic year. Emerging themes from an analysis of the focus group transcripts were categorized by (a) prior performance level, (b) confidence and (c) content of tutoring sessions.

Prior performance level. Participants were asked, “For which students would the program be most helpful?” Strong support indicated the program was most beneficial for “struggling students.” One respondent who works with secondary students stated, “... those are the students who are in the classroom and they’re not gaining whatever concepts are being presented and they need that extra help.” Another tutor who works with elementary students said, “... you are developing a kind of individual program for the students who might be struggling, but do not have IEPs.” Another tutor said, “I would say struggling students... I would say I’ve seen grades come up quickly.”

Confidence. A general theme of confidence was evident throughout each of the focus groups. The tutors presented confidence in their own ability to influence student

achievement. For example, one tutor said, “I’m giving them skills to help them feel more confident.” Another remarked, “I know I am making a difference... I see their reading scores soar and their fluency increase.” One tutor claimed that the establishment of a connection or rapport with students allowed him to help students feel more confident dealing with issues outside the classroom. In each focus group session, SES instructors described students who were confident that their participation in SES was likely to lead to improved learning. Tutors also described the self-confidence that students feel when they know they are progressing.

Content of tutoring sessions. The quantitative analysis focused on the change in student achievement on both mathematics and ELA standardized assessments. Focus group participants were asked to estimate the percent of time they spent reviewing old exams and engaging in test preparation activities. Responses ranged from 10 to 20%. One teacher said, “... most of my sessions are summarized at the end by typical types of Regents questions.” Another noted, “... sometimes you narrow it down to the students’ needs. Sometimes students do not really need intense help.”

Summary of the Results

This program evaluation was designed to answer two research questions related to the impact and effectiveness of SES in the RCSD. To determine who is impacted by the program, student participation data was reviewed by gender, race/ethnicity, grade level, prior performance level, special education and LEP/ELL status. The results showed that one out of five students accessed the free tutoring available under NCLB guidelines. For students who participate, most receive approximately 20 hours of instruction. Students

scoring below NYSED Learning Standards were more likely to participate in SES than their higher-performing peers.

To determine the effectiveness of SES, student achievement data on New York State standardized tests was reviewed for SES participants and SES-eligible non-participants for 2006 and 2007. Although SES instructors participating in focus groups expressed optimism about the impact of their tutoring, the overall data set produced few examples of evidence that SES participants performed better than their peers. Among the samples matched by gender, grade level and race/ethnicity, a small, positive effect size was identified for African American females in grades 6 to 7 (+0.34) and grades 7 to 8 (+0.24). A small negative effect size was noted for Hispanic males in grades 6 to 7 (-.25). A discussion of these findings and recommendations for further study are included in Chapter 5.

Chapter 5: Discussion

Introduction

The purpose of this program evaluation was to examine the impact and effectiveness of SES in the RCSD. The findings on student participation in the RCSD supplemental education services program provide insight into the past, as well as, practical implications and recommendations for the future. The study addresses the problem identified by Sunderman et al. (2005) and Burch (2007) by adding to the body of knowledge in an area that relatively few researchers have studied since NCLB was signed into law in 2002.

Implications of Findings

Participation findings. In Chapter Four, the findings were separated by ELA and mathematics treatment periods. Participation during a treatment period is not intended to imply, (1) that students participating during the mathematics treatment period received tutoring exclusively, or even partially in mathematics, or (2) that students participating during the ELA treatment period received tutoring exclusively, or even partially in mathematics. Despite this limitation, the results are useful in determining the overall level of involvement in SES and, by extension, the percentage of students who choose not to participate.

For the population studied, 21.7% of eligible students were enrolled in SES during the mathematics treatment period between March 2006 and March 2007. Males and females participated at comparable rates. Among racial/ethnic groups, participation

rates were highest for Hispanic (23.1%) and African American students (23.0%) and lowest for Caucasian students (7.8%). On average, these figures were slightly above the national participation rate of eligible students in NCLB SES of 19% in 2004-05 (U.S. General Accountability Office, 2006).

The purpose of SES is to create additional opportunities for student learning. Yet, with few exceptions among the groups examined, less than 75% of eligible students chose to access the additional instruction available to them at no charge. Given the relatively low academic achievement of students in the RCSD, the opportunity to receive individualized academic support in reading, writing and arithmetic would seem to be more desirable than what is represented in the numbers. Data on the specific reasons for non-participation was not collected. Hypotheses include an inadequate recruitment effort, the lack of a perceived benefit by parents or students, and/or a belief by parents or students that a competing, non-SES after-school option that is provided by the RCSD or another organization (i.e., YMCA) may be more advantageous.

This study did not attempt to determine the origin of the relatively low participation rates, but it did provide some insight into differences among groups of students. For example, 15.9% of eligible students scoring above proficiency in 2005-06 mathematics participated in tutoring compared to 23.7% of students scoring below proficiency. Although lower-performing students were more likely to participate in SES, Table 1.1 displayed data indicating that the percentage of students scoring below standard ranged from 44% at grade 3 to 87% at grade 7. Despite the evidence that the mathematics needs were greater at the secondary level, a higher percentage of students participated at the elementary level, peaking at 37.4% for students from grade 4 to 5.

Because SES is voluntary, if SES is not meeting their needs, students may choose to stop attending at any time. Therefore, more hours of SES participation may be interpreted to indicate a degree of student satisfaction, parent commitment, teacher encouragement, or a feeling that the sessions are valuable and student academic needs are being addressed. Overall, students averaged 21.3 hours of instruction during this mathematics treatment period, with just 8.2% of enrolled students participating for 46 or more hours. If this hypothesis is true, a higher satisfaction rate at the secondary level may be inferred from the average participation hours for students in grade 7 to 8 (23.9 hours), compared to students in grade 3 to 4 (16.8 hours).

Mathematics achievement findings. To determine the extent that SES is correlated to increased academic achievement, the program evaluation used archived data collected during the 2005-06 and 2006-07 academic years. Treatment groups included SES-eligible students between grades 3 through 8. The overall effect size for mathematics was +0.09, which was consistent with the +0.09 effect size for SES participation found in Zimmer et al. (2007). When students were matched by the stated criteria as well as gender, race/ethnicity and grade level, five groups emerged with treatment sizes of greater than 30. One of the five groups, grade 6 to 7, male, Hispanic students, produced a negative effect size of -0.25. Two of the five groups yielded positive Cohen's *d* effect sizes above 0.2 (a) grade 6 to 7, female, African American, +0.34, and (b) grade 7 to 8, female, African American (+0.25).

The difference in mean z-scores was also compared for treatment and control groups by gender, racial/ethnic groups, and grade level. For treatment samples greater than 30, the largest effect sizes were calculated for: (a) African American (+0.17), (b)

female students (+0.13), and (c) students in grade level 3 to 4 (+0.27). The most negative effect size for a treatment sample larger than 30 was for Hispanic students (-0.13).

The positive and negative effect sizes which emerged for students from different racial/ethnic groups may be related to the demographic make-up of students served by each provider. For example, one provider may market itself as specializing in working with Hispanic students. If that provider attracts a high percentage of the SES-participating Hispanic students, and the provider is generally ineffective, then the results may present as demonstrating that Hispanic students do not benefit as much from SES or that the instruction is did not occur in the student's native language. Future research may wish to study student participation and achievement with each vendor. In particular, researchers may study how participation is influenced by vendor and District recruitment efforts and how achievement may be impacted by differences in service delivery, curriculum, and level of collaboration and communication with the classroom teachers during the regular school day.

One of the unanticipated findings shown in Appendix F is that SES recipients performed progressively worse, relative to the control group, as they engaged in more hours of tutoring (+0.11 for 1 to 15 hours and -0.02 for 46 or more hours). This finding was inconsistent with previous literature from Lauer et al. (2004) and Rickles & Barnhart (2007), which documented evidence of greater gains for students engaged for longer periods of time.

One possible explanation for this finding is that the "control group" may have received an alternate treatment that was more effective than SES. The more hours of student participation in SES, the less likely it would be that the same students could have

participated in an alternate after-school program at the same time. Because 100% of the teachers in such a program are RCSD classroom teachers, the curriculum and instruction may be more closely aligned to classroom instruction and State assessments. Future studies should compare SES participants with participants in non-SES after-school alternatives. This perspective would provide data to assess which after-school program offers the greatest likelihood of improving student learning, and would help to inform associated resource allocation decisions.

Further study on the impact of fatigue and waning attentiveness may also provide insight into instances where student achievement is negatively impacted by SES performance. Although the hypothesis was not tested in this study, these factors may be more prevalent for SES participants, who may be too tired, or too disinterested, to complete classroom-assigned homework assignments in the evening. This might be studied, for example, by comparing the homework completion rates for SES-eligible participants and non-participants.

ELA Achievement Findings

The overall effect size for ELA was -0.03. Statistically significant effect sizes were identified for (a) students with a prior performance level of 2 (-0.17), (b) students with a prior performance level of 3 (-0.13), (c) students with 16 to 30 hours (-0.05), (d) students with 46 or more hours of instruction (-0.15), and (e) male students (-0.09). The overall pattern of negative effect sizes produced by SES participants compared to SES non-participants was unanticipated given the studies discussed in the literature review. Similar to the discussion of the mathematics results, one explanation is that students in the “control group” may have participated in an alternate RCSD after-school program.

The somewhat higher effect sizes noted for the mathematics treatment groups compared to the ELA treatment groups may also be attributable to the nature of the content. Teaching mathematics may involve a more concrete set of skills. Targeting discrete reading deficiencies, particularly at the secondary level, may be more difficult to diagnose and treat.

One key finding showed that boys who received SES netted an effect size of 0.10 standard deviations lower than girls who received SES. There were no single-sex SES providers in the RCSD in 2005-06 or 2006-07, but further studies may seek to determine if experimentation with same-sex SES groups produces more favorable results for boys.

Focus group findings. Two focus groups were conducted with small groups of SES instructors. Some relevant patterns and themes emerged from the discussion. Focus group participants shared that they expected the greatest gains to come from students who attended regularly and from those with the lowest prior performance levels. These findings were not corroborated by the quantitative data.

Finding focus group participants proved much more challenging than expected. Given the contradictory quantitative and qualitative findings and the limited number of focus group participants, it is conceivable that the focus group participants were more ambitious and optimistic than the average tutors. Future studies should consider larger focus groups, surveys and interviews to provide additional data on tutor perceptions of program effectiveness.

Summary. The program evaluation of SES was designed to develop a greater understanding of the level of involvement of RCSD students in the SES program offered under NCLB. The study showed that only a fraction of eligible students were accessing

the opportunity to receive free tutoring. Once enrolled, less than 10% of the students remained engaged for 46 or more hours.

The effectiveness of SES participants was analyzed by reviewing the change in pre- and post-test standardized test results in ELA and mathematics. On average, students who received SES outperformed treatment groups with non-SES participants. Overall, the findings for ELA produced a negative effect.

Limitations

There were a number of limitations in this study. Although over 10,000 students were eligible for SES, the number of students included in this study was limited by a number of factors. Specifically, the population to be studied was limited to eligible students in grades three through eight. Only students who were promoted were included, whereas those who were retained at the same grade level in 2005-06 and 2006-07 were excluded.

During the 2005-06 school year, data on SES instruction was not tracked by subject area. Thus, it is conceivable that a student could have been tutored exclusively in mathematics, but the student would be included in the ELA treatment group. Similarly, a student may have been tutored exclusively in ELA, but appear in the mathematics treatment group. Whereas the previous limitations served to define the group, this limitation must be strongly considered to avoid making false assumptions about the instruction that students may have received. Future studies should maintain accurate data on the specific amount of tutoring that was mathematics-based versus ELA-based.

One distinction between ELA and mathematics is the date the assessments are administered each year in New York State. Because the ELA assessment is administered

in January each year, the treatment period runs from January to January. By contrast, the mathematics treatment period covers March through March. The treatment period is one calendar year. However, if 2005-06 represents academic Year One and 2006-07 represents academic Year Two, then the duration of time for ELA instruction was greater in Year One than in Year Two for SES participants. By contrast, the mathematics treatment period in Year Two extended two months longer than the ELA treatment period. Given this phenomenon, it is possible that students may have been more likely to lose gains accrued from ELA tutoring in Year One over the summer, whereas any benefits from SES related to mathematics would be more likely to occur closer to the test administration date. This is particularly true in RCSD where SES services began in November for the students who registered early. The early registrants may have received up to three months of SES in Year Two before the ELA exam in January, but five months of SES support leading up to the mathematics exam in March.

The treatment and control groups included a myriad of potential intervening variables, including student participation in RCSD after-school programs other than SES. Assumptions that the treatment and control groups were exposed to similar intervening variables might be problematic for many reasons and should weigh some considerations. First, students who attended SES were enrolled by their parents. There is the possibility that home support may be stronger from parents who actively enrolled their children in SES. Paradoxically, it is conceivable that parents who chose not to enroll their children in SES did so because they were more confident that non-SES after-school programs offered by the RCSD were more likely to help their child. It is possible that non-SES participants may have been more likely to be enrolled in one or more alternate programs

after-school or summer school programs which may have impacted their performance.

Future studies should collect and utilize student data on program participation to attempt to create more closely matched treatment and control groups.

Recommendations

The U.S. Department of Education (2004, p.2) asserts, “Carefully tailored learning interventions can yield quite remarkable and swift progress in overcoming learning obstacles.” Whereas such a change in student achievement was a main focus of this program evaluation, the study did not examine the vendors, the instructional content or the service delivery models. Future studies should examine the change in academic achievement in relation to the alignment of SES instruction with curriculum and instructional delivery in each school, the New York State Learning Standards and the specific learning needs of the students being served.

The program evaluation was focused on the change in student performance level from 2005-06 to 2006-07. It did not examine other achievement indicators such as vendor-administered assessments, classroom grades, promotion/retention rates, and classroom-administered formative assessments. This study did not measure the impact of other potentially mitigating factors, such as the quality of the classroom teacher(s), or enrollment in a different after-school or summer school program. Future studies should consider a spectrum of dependent variables outside of standardized assessments, as well as methods for controlling as many independent variables as possible.

Supplemental education services is funded by reserving 20% of the Title I funding from an LEA for this purpose. The program evaluation was designed to determine if there was evidence that SES participants were deriving an academic benefit from the

tutoring services. It was not designed to determine the extent that SES may or may not have been a cost-effective academic intervention for the students served. One of the distinguishing characteristics of SES is that it occurs outside the regular school day. A future study may wish to examine the cost effectiveness of an intervention of comparable cost which occurs during the school day.

Aspects of Zimmer et. al (2007) were considered in the development of this study. However, some of the limitations of the study, and the challenges associated with gathering data from multiple school systems, were mitigated. For example, Zimmer et al. relied on the academic year as the treatment period. By contrast, this study included portions of two academic years by defining the treatment period as the time between the pre- and post-tests. For ELA, this time period was January, 2006 to January, 2007 and for mathematics, March, 2006 to March, 2007. Because open enrollment in SES is maintained in Rochester through April, it is conceivable that students could enroll after the ELA and mathematics exams are administered. Using the treatment period as the academic year may have resulted in placing these students in the treatment group even though they received no SES before the assessments.

Zimmer et al. utilized enrollment as a proxy for participation. Many students in the RCSD enroll in SES, but do not participate in SES. These students were placed in the control group, rather than the treatment group. Some students were registered at the start of the school year, but attended only long enough to complete the diagnostic exam. The “treatment” they received would be very different from a student who attended for 45 hours.

Finally, including a student in a “mathematics treatment group” implies an intervention in the area of mathematics. For purposes of this program evaluation, the RCSD did not begin requesting and collecting data on the subject area of SES instruction until the 2006-07 academic year. As a result, this study reflects the number of instructional hours occurring between the administration of the 2005-06 and 2006-07 ELA exams and the number of instructional hours occurring between the administration of the 2005-06 and 2006-07 math exams. Future studies should consider collecting data on the specific time students spend engaged in mathematics and ELA instruction. Also, pre- and post-tests administered at the beginning and end of the instructional period would reduce many of the intervening variables (i.e. summer school) that occur when relying solely on State standardized assessments. For example, the RCSD has one vendor, Failure Free Reading, which tutors exclusively in ELA. It may seem unfair to evaluate the effectiveness of the Failure Free Reading program by measuring the change in mathematics achievement when no direct instruction occurred in the area of mathematics.

Conclusions

The program evaluation of SES in the RCSD aimed to determine which students were taking advantage of the free tutoring offered under NCLB and the effectiveness as evidenced on State assessments in ELA and mathematics. During a pair of focus groups with SES instructors, the participants emphasized the self-confidence students built by working on their needs in a safe, nurturing environment where it was acceptable to make mistakes. Without exception, the participants felt that their efforts working with students would translate into positive gains on the State assessments.

Generally, the quantitative data from 2005-06 and 2006-07 yielded mixed results and did not yield positive findings approaching the level of support expressed by the focus group participants. However, statistically significant findings were noted for African American females in grades six through eight. Significant gains were also identified for the female and African American student populations in mathematics. From a practical perspective, these findings may justify increased efforts to enroll more eligible students, and earlier in the year, so that the impact of the intervention may be reflected in the March administration of the New York State mathematics assessment.

By contrast, a review of the ELA data produced an unexpected effect size of -0.17 when comparing treatment and control groups scoring at a prior performance level of 2. This scenario is troublesome from a policy and a practical perspective and warrants further study. Futures studies may serve to build a broader knowledge base in this area to increase the likelihood that federal funds will be utilized in a manner that generates the greatest impact on the future success of students attempting to break free from the challenges of poverty.

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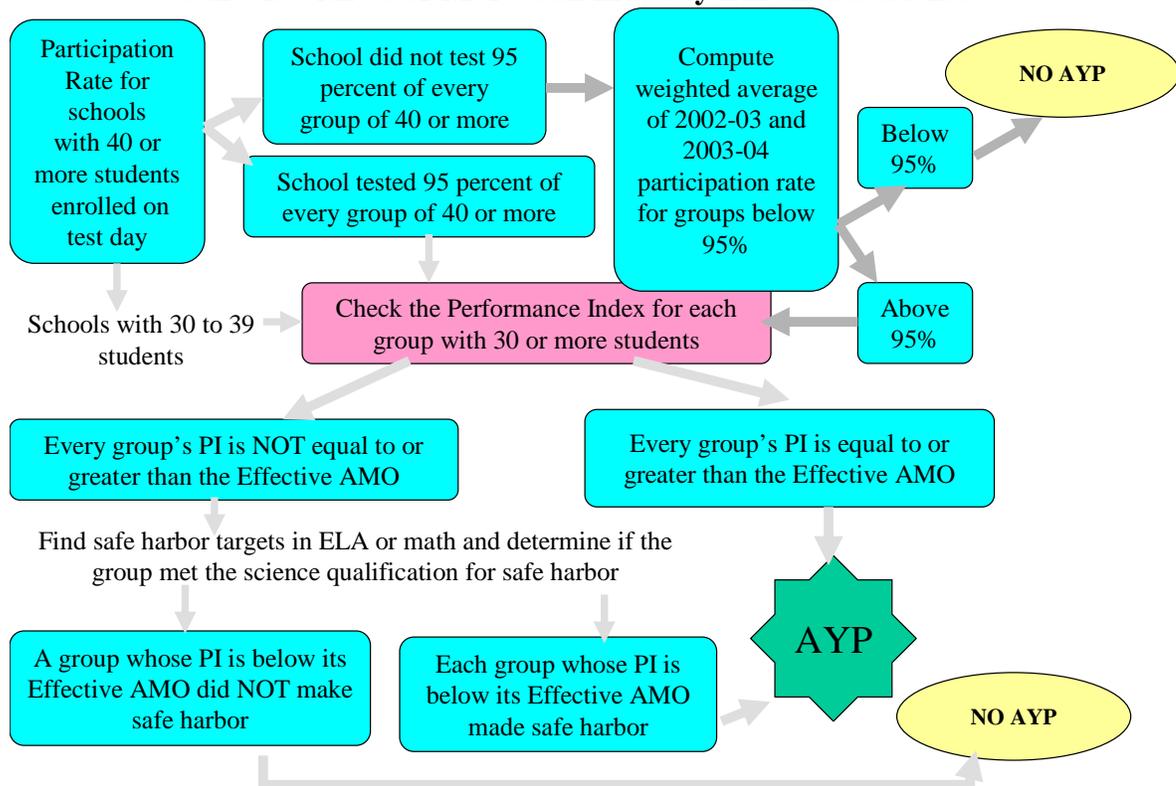
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Appendix A

Making AYP in New York State

Determining AYP in Elementary- and Middle-Level ELA or Math for Schools with 30 or More Continuously Enrolled Students



Note: AMO is the annual measurable objective or target set for each school based on achievement of the students on previous standardized test results. PI is for performance index, which is determined based on the percentage of students scoring at performance levels 2 + 3 + 4 and the percentage of students scoring at performance levels 3 + 4.

Source: New York State Education Department. (2007). *Overview of NCLB
Accountability System*. Retrieved January 27, 2008 from:

file:///D:/AYP%20in%20NYS%20-%20Ischwartz.ppt#392,9,Slide 9.

Appendix B

SES Vendor Summary Information

 <p>New York State Education Department</p>		
<p>Supplemental Educational Services Summary Information</p> <p>Dial-A-Teacher, Inc.</p>		
1.	Name of organization:	Dial-A-Teacher, Inc.
	Primary location:	30 N. Union St., Rochester, NY 14607 Services will be offered at various recreation centers, branches of the Rochester Public Library and eligible schools throughout the City.
	Contact information: (phone / email / website):	Mark Powers (585)546-2681 or (585) 262-5000 mpowers@rochester.rr.com
	LEAs where service will be provided:	Rochester City School District
2.	Years provider has delivered service:	21 years
3.	Evidence that services have been effective:	Dial-A-Teacher uses research-based methods in the delivery of services. Services are provided by NYS certified and highly qualified teachers in small group sessions.

4.	Title of the instructional program, curriculum series to be used (if appropriate):	Curriculum used will be aligned with the curriculum used in the student's school.
5.	Grade level(s) the provider will serve:	K-12
6.	Content area(s) provider will serve:	English language arts (including reading) and mathematics
7.	Number of sessions provided per week, if applicable:	2-4 sessions/week (depending on assessment of student done by teacher)
8.	Average length of each service session (minutes/hours):	1.5 hours
9.	Duration of the available service period (e.g. September 1 – June 30; September 1 – August 31; weekends only; summer school only; specific number of weeks or hours, other, etc.):	September-June
10.	Type of instruction:	Small group sessions (a maximum of 7 students/group)
11.	Qualifications of the service provider(s)/instructor(s):	All instructors are NYS certified teachers and teachers of the Rochester City School District.
12.	Reports to parents, teachers, and LEA (Content, frequency, method of delivery):	Monthly reports to parents, teachers and the LEA will include, but not be limited to, information on academic progress and attendance.
13.	Will transportation to the service location be provided at no charge if requested? (Note: LEAs are not required to provide or pay for transportation)	No
14.	Additional relevant information:	



New York State Education Department

Supplemental Educational Services Service Summary Information

Iglesia Services, Inc.

1.	Name of organization:	Iglesia Services, Inc.
	Primary location:	1176 Dewey Avenue Rochester, New York
	Contact information: (phone / email / website):	Karen Iglesia, President/CEO (585) 254-2070 kiglesi1@rochester.rr.com Tricia Skwieralski, Chief Financial Officer (585) 576-1393 Trish180@aol.com
	LEAs where service will be provided:	All LEAs in Greater Rochester Area (including Rochester City SD, Greece SD and Rush-Henrietta SD), Buffalo City SD, Syracuse SD.
2.	Years provider has delivered service:	Nine years
3.	Evidence that services have been effective:	Specialize and accomplished in tutoring and test preparation in integrated math, elementary math, calculus, Math A and B, SAT, PSAT and ACT exams, ELA, English, Spanish and hard sciences for close to 10,000 students Success rates include 92% pass rate for Regents exams (83% of which have passed with a grade of 'C' or better); 87% of enrolled 8th graders have met or exceeded NYS Math standards; 85% of enrolled 8th graders have met the NYS ELA standards. SAT prep program

		<p>students have demonstrated an average 110 point increase in scores, with some students improving over 300 points.</p> <p>Established and growing private client base.</p> <p>Renewed and new contracts with community-based organizations, school districts and universities.</p>
4.	Title of the instructional program, curriculum series to be used (if appropriate):	N/A (combination of programs, including in-house)
5.	Grade level(s) the provider will serve:	<p>-English Language Arts including reading: grades 4-8</p> <p>-Mathematics: grades 4-12</p>
6.	Content area(s) provider will serve:	<p>-English language arts including reading</p> <p>-Mathematics</p>
7.	Number of sessions provided per week, if applicable:	Twice per week
8.	Average length of each service session (minutes/hours):	1.5 hours (90 minutes) in length each
9.	Duration of the available service period (e.g. September 1 – June 30; September 1 – August 31; weekends only; summer school only; specific number of weeks or hours, other, etc.):	Year-round, including summer months and don weekends (Saturdays 10 am-2 pm and Sundays 12-4 pm). During the school-year, services will be delivered after school from 3-7 pm.
10.	Type of instruction:	Small class size; 4:1 student-teacher ratio maximum
10a.	Description of methods and strategies for serving eligible students with disabilities:	<p>Will work collaboratively with LEAs to ensure developed "supplemental education plans" are consistent with all legislative requirements.</p> <p>Alignment of supplemental educational services and "supplemental education plans" with student IEPs.</p> <p>Sign-language interpreters, materials in large type, Braille editions, tape recorders.</p>
10b.	Description of methods and strategies for serving eligible students with limited English proficiency:	<p>Use of Iglesia Services Inc.'s bi- and multi-lingual tutors (i.e. - Spanish, French, German).</p> <p>Additional available resources include</p>

		bilingual dictionaries and glossaries.
11.	Qualifications of the service provider(s)/instructor(s):	<p>Established tutoring and educational consulting business nine years in operation.</p> <p>Numerous contracts with community-based organizations, school districts and universities to provide tutoring and academic programming to students. Private client base includes students with limited English proficiency, students with disabilities and refugees from countries including Sudan, Haiti and Guatemala.</p> <p>Tutoring staff of forty tutors. NYS Certified Teacher will supervise and oversee all SES instruction. Additional Iglesia Services Inc. tutors are finalizing NYS Teacher Certification requirements. Bi- and multi-lingual tutors on staff.</p>
12.	Reports to parents, teachers, and LEA (Content, frequency, method of delivery):	<p>All parents and teachers will be informed regularly (quarterly at minimum) of student progress through meetings and progress reports. Progress reports to LEAs quarterly at minimum and as per guidelines. Monthly meetings and update reports to Rochester City SD AIS Director (and other LEAs as determined) Final reports to LEAs no later than May 31st as per guidelines.</p>
13.	Will transportation to the service location be provided at no charge if requested? (Note: LEAs are not required to provide or pay for transportation)	Yes.
14.	Additional relevant information:	An Iglesia Services Inc. parent representative from the community has been designated for SES to facilitate continuous communication with parents.



New York State Education Department

Supplemental Educational Services Summary Information

Baden Street Settlement

1.	Name of organization:	Baden Street Settlement
	Primary location:	152 Baden Street Rochester, NY 14605
	Contact information: (phone / email / website):	Ronnie Thomas (585) 325-4910 rthomas4@hotmail.com
	LEAs where service will be provided:	Rochester City School District ELA
2.	Years provider has delivered service:	
3.	Evidence that services have been effective:	Standardized Test Scores Report Cards
4.	Title of the instructional program, curriculum series to be used (if appropriate):	Instructional Systems Computer System, America's Choice Success For All
5.	Grade level(s) the provider will serve:	Middle School and High School (this application contains info for Middle and High School only. Baden Street is already approved for Elementary School)
6.	Content area(s) provider will serve:	Math and English Language Arts including reading and writing
7.	Number of sessions provided per week, if applicable:	4 sessions
8.	Average length of each service session (minutes/hours):	1.5 hours
9.	Duration of the available service period	Monday-Saturday during the School Year

	(e.g. September 1 – June 30; September 1 – August 31; weekends only; summer school only; specific number of weeks or hours, other, etc.):	Monday-Thursday Summer
10.	Type of instruction:	
11.	Qualifications of the service provider(s)/instructor(s):	
12.	Reports to parents, teachers, and LEA (Content, frequency, method of delivery):	
13.	Will transportation to the service location be provided at no charge if requested? (Note: LEAs are not required to provide or pay for transportation)	
14.	Additional relevant information:	

Source: New York State Education Department (2008). Supplemental educational services summary of providers. Retrieved February 6, 2008 from: <http://www.emsc.nysed.gov/nyc/SES/ApprovedProviders/AlphaList.html>.

Appendix C

Focus Group Planning Template

<u>Part 1</u>	Opening Question (10-20 seconds/participant)
1.1	What is your experience working as an instructor in the SES program?
<u>Part 2</u>	Introductory Questions (General, open-ended, trust-building)
2.1	How did you become involved in the program?
2.2	How were your students recruited and assigned to you?
2.3	I'm going to give you a few minutes to think, and then I would like you to share your thoughts about the program in exactly five words. (i.e. – if I were to ask how you feel about the weather, you might respond, “no jacket today spring coming”)
<u>Part 3</u>	Transition Question
3.1	Teachers often get into teaching because they say they want to “make a difference.” Based on your participation as an instructor in this program, do you feel you are “making a difference?”
<u>Part 4</u>	Key Questions (Source of majority of the specific data to address research questions)
4.1	Think of one of your students with the greatest academic needs. What

	would the child's classroom teacher say if he or she were to sit in on your session with the child?
4.2	For which students is the program most helpful?
4.3	Under what conditions is the program most effective?
4.4	Describe the circumstances that may cause some students to remain active in the program and others to stop attending? Probe: Who are the groups or individuals who could have the greatest influence on students' decisions to remain active?
4.5	How do you feel about the ability of SES to impact student achievement? Probe: Do you believe the results of your efforts working with students would reflect on NYS achievement scores?
<u>Part 5</u>	Ending question (Final thoughts)
5.1	Let's summarize key points from the discussion. (Moderator summarizes). Does that sound accurate? Do you have any changes or additions?
5.2	The goal of SES is to improve student learning. Your responses today will help interested individuals learn more about how SES may improve student learning. I want to give you one final opportunity to respond to the sentence starter, "I wish you had asked me about <...>, because I wanted you to know..."

Appendix D

Planned Data Collection

INDEPENDENT VARIABLES

1. Enrolled
 - 1.1. 0 = No
 - 1.2. 1 = Yes
2. Lunch status
 - 2.1. 0 = paid
 - 2.2. 1 = reduced price lunch eligible
 - 2.3. 2 = free lunch eligible
3. Total hours of SES instruction during the 2005-06 academic year
4. Total hours of SES instruction during the 2006-07 academic year
5. Total hours 2005-06 and 2006-07
6. Hours of SES instruction provided between pre- and post-tests
7. Hours of SES instruction in math between pre- and post-tests
8. Hours of SES instruction in ELA between pre- and post-tests
9. Grade level during 05-06 academic year (k – 12)
10. Grade level during 06-07 academic year (k – 12)
11. Vendors (Note: actual vendor names will be coded – i.e. Provider A, B, C...)
 - 11.1. Baden Street Settlement Educational Services
 - 11.2. Berkshire Farm Center & Services
 - 11.3. Club Z!
 - 11.4. Community Place of Greater Rochester
 - 11.5. Dial-A-Teacher
 - 11.6. Education Station
 - 11.7. Failure Free Reading
 - 11.8. Iglesia Services
 - 11.9. LDA Life & Learning Services
 - 11.10. Monroe #1 BOCES
 - 11.11. Murray Learning
 - 11.12. Princeton Review
 - 11.13. St. John Fisher College
 - 11.14. Studio Art Corporation
 - 11.15. Sylvan Learning Center
12. School
 - 12.1. 1 = Elementary
 - 12.1.1. #9

- 12.1.2. #45
- 12.2. 2 = Secondary
 - 12.2.1. Charlotte
 - 12.2.2. Douglass
 - 12.2.3. East
 - 12.2.4. Jefferson
 - 12.2.5. Marshall
 - 12.2.6. Monroe
 - 12.2.7. School Without Walls
 - 12.2.8. Wilson
- 13. Determination of students “at-risk” of not meeting the math standards
 - 13.1. 0 = “on-track” (Level 3 or 4 on pretest in math)
 - 13.2. 1 = “at-risk” (Level 1 or Level 2 on pretest in math)
- 14. Determination of students “at-risk” of not meeting the ELA standards
 - 14.1. 0 = “on-track” (Level 3 or 4 on pretest in ELA)
 - 14.2. 1 = “at-risk” (Level 1 or Level 2 on pretest in ELA)
- 15. Promotion/Retention
 - 15.1. 0 = Promoted from grade ‘x’ in 05-06 to grade ‘x+1’ in 2006-07
 - 15.2. 1 = Retained in grade ‘x’ in 05-06 and 06-07
- 16. Special Education
 - 16.1. 0 = No
 - 16.2. 1 = Yes
- 17. English Language Learner
 - 17.1. 0 = No
 - 17.2. 1 = Yes
- 18. Ethnicity
 - 18.1. 0 = African American
 - 18.2. 1 = Asian
 - 18.3. 2 = Caucasian
 - 18.4. 3 = Hispanic
 - 18.5. 4 = Native American
 - 18.6. 5 = Other
- 19. Gender
 - 19.1. 0 = female
 - 19.2. 1 = male

DEPENDENT VARIABLES

20. Achievement Data

- 20.1. Raw score on Math exam in grades 3-7 for 2005-06 (0 to 700)
- 20.2. Raw score on ELA exam in grades 3-7 for 2005-06 (0 to 700)
- 20.3. Raw score on Math exam in grades 4-8 for 2006-07 (0 to 700)
- 20.4. Raw score on ELA exam in grades 4-8 for 2006-07 (0 to 700)

21. Performance Level

- 21.1. Performance indicator on Math exam in grades 3-7 for 2005-06 (1, 2, 3, 4)
- 21.2. Performance indicator on ELA exam in grades 3-7 for 2005-06 (1, 2, 3, 4)
- 21.3. Performance indicator on Math exam in grades 4-8 for 2006-07 (1, 2, 3, 4)
- 21.4. Performance indicator on ELA exam in grades 4-8 for 2006-07 (1, 2, 3, 4)

Appendix E

SES-eligible students in gender, race and grade level matched samples

	Mathematics			ELA		
	Treat- ment	Cont- rol	Partici- pating	Treat ment	Cont- rol	Partici pating
	<i>n</i>	<i>n</i>	<i>P</i>	<i>n</i>	<i>n</i>	<i>P</i>
Gr. 3 to 4, male, African Amer.	16	28	36%	15	29	34%
Gr. 3 to 4, male, Caucasian	0	1	0%	0	1	0%
Gr. 3 to 4, male, Hispanic	1	12	8%	1	12	8%
Gr. 3 to 4, female, African Amer.	10	20	33%	7	23	23%
Gr. 3 to 4, female, Caucasian	0	0	-	0	0	-
Gr. 3 to 4, female, Hispanic	3	10	23%	2	12	14%
Gr. 4 to 5, male, African Amer.	14	22	39%	12	26	32%
Gr. 4 to 5, male, Caucasian	0	1	0%	0	1	0%
Gr. 4 to 5, male, Hispanic	6	12	33%	4	13	24%
Gr. 4 to 5, female, African Amer.	15	21	42%	14	22	39%
Gr. 4 to 5, female, Caucasian	0	0	-	0	0	-
Gr. 4 to 5, female, Hispanic	4	9	31%	3	10	23%
Gr. 5 to 6, male, African Amer.	16	21	43%	12	25	32%
Gr. 5 to 6, male, Caucasian	0	1	0%	0	1	0%
Gr. 5 to 6, male, Hispanic	4	18	18%	3	19	14%
Gr. 5 to 6, female, African Amer.	14	30	32%	13	32	29%
Gr. 5 to 6, female, Caucasian	0	0	-	0	1	0%
Gr. 5 to 6, female, Hispanic	4	11	27%	4	11	27%
Gr. 6 to 7, male, African Amer.	87 ^a	372	19%	52 ^a	407	11%
Gr. 6 to 7, male, Caucasian	4	60	6%	2	63	3%
Gr. 6 to 7, male, Hispanic	30	80	27%	22	86	20%
Gr. 6 to 7, female, African Amer.	67 ^a	392	15%	51 ^a	412	11%
Gr. 6 to 7, female, Caucasian	1	47	2%	1	46	2%
Gr. 6 to 7, female, Hispanic	22	104	17%	14	110	11%
Gr. 7 to 8, male, African Amer.	83 ^a	282	23%	80 ^a	294	21%
Gr. 7 to 8, male, Caucasian	5	36	12%	5	36	12%
Gr. 7 to 8, male, Hispanic	24	75	24%	22	75	23%
Gr. 7 to 8, female, African Amer.	108 ^a	255	30%	102 ^a	270	27%
Gr. 7 to 8, female, Caucasian	5	31	14%	6	29	17%
Gr. 7 to 8, female, Hispanic	24	75	24%	22	77	22%

^a indicates treatment sample size of at least 30

Appendix F

Summary of Mathematics and ELA results, including Confidence Intervals

		Mathematics		
		Upper bound	Lower bound	Effect size (<i>d</i>)
Table 4.7	1 to 15 hours	0.15	0.01	0.11
	16 to 30 hours	0.15	-0.01	0.11
	31 to 45	0.05	-0.17	0.01
	46 or more hours	0.01	-0.24	-0.02
Table 4.9	African American	0.21	0.09	0.17
	Caucasian	-0.44	-0.84	-0.54
	Hispanic	-0.05	-0.29	-0.13
	Overall	0.12	0.02	0.09
Table 4.11	Female	0.17	0.03	0.13
	Male	0.10	-0.05	0.05
Table 4.13	Grade 3 to 4	0.40	0.05	0.27
	Grade 4 to 5	0.12	-0.27	-0.07
	Grade 5 to 6	0.25	-0.15	0.08
	Grade 6 to 7	0.11	-0.07	0.06
	Grade 7 to 8	0.20	0.04	0.14
Table 4.15	Gr. 6 to 7, male, African American	0.23	-0.03	0.14
	Gr. 6 to 7, female, African American	0.43	0.15	0.34
	Gr. 6 to 7, male, Hispanic	-0.03	-0.65	-0.25
	Gr. 7 to 8, male, African American	0.21	-0.02	0.12
	Gr. 7 to 8, female, African American	0.34	0.08	0.25
Table 4.17	Prior performance level 4	0.71	-0.25	0.48
	Prior performance level 3	0.09	-0.14	0.03

	Prior performance level 2	-0.03	-0.15	-0.07
	Prior performance level 1	0.14	-0.05	0.07
ELA				
		Upper bound	Lower bound	Effect size (<i>d</i>)
Table 4.8	1 to 15 hours	0.02	-0.12	-0.01
	16 to 30 hours	-0.02	-0.18	-0.05
	31 to 45	0.00	-0.21	-0.03
	46 or more hours	-0.12	-0.40	-0.15
Table 4.10	African American	0.02	-0.10	-0.01
	Caucasian	0.28	-0.16	0.17
	Hispanic	0.00	-0.26	-0.08
	Overall	-0.01	-0.11	-0.04
Table 4.12	Female	0.06	-0.09	0.01
	Male	-0.05	-0.20	-0.09
Table 4.14	Grade 3 to 4	0.09	-0.29	-0.08
	Grade 4 to 5	0.05	-0.35	-0.12
	Grade 5 to 6	0.07	-0.33	-0.08
	Grade 6 to 7	0.02	-0.17	-0.03
	Grade 7 to 8	0.04	-0.12	-0.01
Table 4.16	Gr. 6 to 7, male, African American	-0.03	-0.32	-0.10
	Gr. 6 to 7, female, African American	0.30	0.00	0.22
	Gr. 7 to 8, male, African American	0.02	-0.25	-0.06
	Gr. 7 to 8, female, African American	0.05	-0.19	-0.04
Table 4.18	Prior performance level 4	0.84	0.14	0.66
	Prior performance level 3	-0.08	-0.27	-0.13
	Prior performance level 2	-0.13	-0.26	-0.17
	Prior performance level 1	0.07	-0.23	-0.04