WORKING
PAPER

Evaluation of Two Out-of-School Programs in Pittsburgh Public Schools

No Child Left Behind's Supplemental Educational Services and State of Pennsylvania's Educational Assistance Program

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EXHIBITS

SUMMARY

Programs that provide services to children outside of school hours have grown tremendously in recent decades. Historically, non- and for-profit organizations provided many of these programs and often did not coordinate their efforts with the school district. However, out-of-school programs have been transformed through federal, state, and local programs—most notably through the No Child Left Behind Act (NCLB). Pennsylvania has also funded its own out-of-school programs, including one known as the Educational Assistance Program (EAP).

A key aim of the NCLB Act is to give parents of students in low-performing Title I schools new educational options, one of which is the opportunity to enroll a child in supplemental educational services (SES) such as tutoring outside the regular school day by state-approved providers. The federally-supported SES option is for low-income students attending schools that have failed to meet state goals for "adequate yearly progress" for three consecutive years. A variety of agencies may provide SES, including for-profit and non-profit entities, faith-based organizations, public or private schools, and school districts, but the state must approve them.

The Pennsylvania EAP provides extended learning opportunities for students by funding tutoring that can be provided before school, after school, during weekends, or in the summer. The EAP targets students who scored below proficient on the state accountability test or scored below a set score on a district-administered test. School districts are required by the state to provide a minimum of 45 hours of EAP instruction per subject area. Some districts have expanded the opportunity to other students. For example, Pittsburgh Pubic Schools opened the EAP program to all students.

Policymakers have a compelling interest in how well these programs are working. At the behest of the Pittsburgh Public School District, RAND examined the effectiveness of the SES and EAP programs in the district. The analysis not only examined the participation and the overall effectiveness of these programs, but also program factors that

were associated with higher student participation and gains in student achievement. To conduct the analysis, we used data from focus groups of parents, surveys of private organizations and schools providing SES and EAP services, and student test scores and demographic information from the district comprehensive data base. From these data sources, we were able to provide a comprehensive depiction of the programs.

Who participated in EAP/SES?

Overall, our analysis suggests that less than 25 percent of eligible students participated in SES and EAP programs, but participation varied by grade. Middle school students were less likely than elementary school students to participate in SES and high school students were less likely than all other students to enroll in EAP. Also, as intended, lower performing students took advantage of these programs. African-American students were no more or less likely to participate in the SES program than white students, but they were more likely to participate in the EAP program and attend more often.

What were some of the barriers to student participation in these programs?

Factors perceived by parents as inhibiting participation included unclear information about eligibility for and cost of the program, disciplinary issues, and provision of transportation. Parents also cited increased competition for students' time as they get older and take on a wider range of activities, e.g., sports and jobs, as a reason for not participating in the programs. Timely reminders by teachers of class sessions were regarded as having a positive effect on attendance.

What effects did EAP/SES activities have on student achievement?

The analysis provides strong evidence that the programs do have a positive effect on student achievement in math, with more limited evidence of an effect in reading. The largest effect occurred in math for students who participated in both programs, and that effect was substantial. The analysis also suggested that achievement gains experienced by African-American students participating in both programs

represented 40 percent of the existing district-wide achievement gap between them and white students in math.

What program factors were associated with higher participation and improved student achievement?

Using data from the surveys of private providers as well as schools, we examined what programmatic features were associated with higher participation rates and student achievement gains. The analysis suggested providing transportation might improve participation in the programs, but not necessarily attendance. In addition, having teachers remind students to attend their sessions was strongly associated with higher attendance. In terms of achievement, grouping students by skill level was associated with achievement gains for students receiving SES. Schools that designed their EAP program to target learning gaps for students (identified from prior school years data) experienced higher achievement gains.

What are our recommendations from our analysis?

The programs appear to have the potential to accomplish important educational goals and are making a difference in student achievement. The Pittsburgh School District, however, could do some things to improve the programs. Most notably, the district could improve the outreach to families by clarifying the information provided. Also, the district could expand access to transportation to these programs and have teachers remind students to attend their sessions. Finally, while there needs to be a greater understanding of how participation in both programs leads to large student achievement gains, there does seem to be evidence that the district should encourage students to participate in both programs.

1. INTRODUCTION

In recent decades, the availability of programs that provide services, both academic and non-academic, to children outside of school hours has grown tremendously. In the past, many of these programs were provided independently of the district, state, or federal government through non- and for-profit organizations. These providers often did not coordinate their efforts with the school district and tried to attract students through their own means. However, in recent years, the world of out-of-school programs has been transformed through federal, state, and local programs—most notably through the No Child Left Behind Act (NCLB), which requires districts to provide funding for supplemental educational services (SES) to students in schools that fail to meet academic targets. Pennsylvania, like many states, has also enacted its own set of out-of-school programs, including a program known as the Educational Assistance Program (EAP). These programs have created a more formal structure for providing services to children outside of the regular school day.

As the role of the government has increased in the provision of out-of-school programs, so too has the level of scrutiny and accountability. Funders, district officials, and program planners need to know whether or not these programs are meeting their student participation and academic performance goals.

THE EAP AND SES PROGRAMS IN THE PITTSBURGH PUBLIC SCHOOLS

Pittsburgh Public School District is a large urban district with over 33,000 students in more than 80 schools during the 2005-06 school year. Like many districts, Pittsburgh is struggling with improving the performance of its students, especially African-American students. Currently, African-American students represent nearly 57 percent of the district population, with white students representing 36 percent of the district and the remaining balance spread across a number of different races/ethnicities. One significant challenge facing the district is the achievement gap between African-American and white students and the

district has made the closing of this achievement gap a top priority. At the same time, the district is focusing on improving the learning of low-performing students more generally. One way of addressing these objectives is through out-of-school programs.

In the 2004-05 school year, the Pittsburgh Public Schools began implementing two new out-of-school programs: the federally-funded SES program and the state-funded EAP program. Before the implementation of these programs, out-of-school programs in Pittsburgh were not, for the most part, run by the district. Instead, they were managed and run by community-based organization such as churches, libraries, museums, recreation centers, and small non-profits. Many of these programs incorporated both academic and enrichment activities as part of their design. While these programs continue to play a strong role in the out-of-school time for students, SES and EAP programs have introduced new alternatives focused more heavily on academic activities such as tutoring. The EAP program is provided directly by the district, and the SES providers, who are not district staff, try to maintain a strong relationship with Pittsburgh Public Schools. Below, we describe these programs in greater detail.

Supplemental Educational Services (SES)

A key aim of the 2001 federal NCLB Act is to give parents of students in low-performing Title I schools new educational options. The first of these options is the opportunity to move a child into a higher-performing school. The second option is the opportunity to enroll a child in supplemental educational services (SES)—such as tutoring—that are offered outside the regular school day by a range of state-approved providers.

The SES is an option for low-income students as defined by free-and-reduced lunch status attending schools that have failed to meet state goals for "adequate yearly progress" for three consecutive years. In Pittsburgh Public Schools, SES were first offered to students in the 2004-05 school year. These services are free to parents and students, must be provided outside the regular school day, and may include tutoring, after-school services, and summer school. Parents are

permitted to select an SES provider from a list of providers that has been approved by the state.

A variety of agencies may provide SES, including approved for-profit and non-profit entities, faith-based organizations, public or private schools, and school districts (provided the district is eligible to provide the services, which Pittsburgh Public Schools was not until the school year of 2006-07). In Pittsburgh, these services were offered entirely off campus. Under NCLB, school districts, in consultation with parents and providers, must develop specific educational goals for each participating student. SES providers are responsible for measuring students' progress and must report regularly on that progress to teachers and parents.

Each state is responsible for developing criteria for approving providers and for supplying school districts with a list of available approved providers in their geographic locations. Exhibit 1.1 lists the SES providers in the Pittsburgh Public School district in the 2005-06 school year and the number of students they served. The exhibit indicates that most SES organizations provide services to very few students and over 60 percent of the students receive services from Huntington Learning Centers, which is the oldest nationwide provider of supplemental services and sells itself as being able to improve study skills of students and includes a thorough diagnostic program that pinpoints problem areas.

Exhibit 1.1 SES Organizations

SES Organization	Number of Students
Allegheny Development	26
ATS Consulting Services	1
Club Z-North	47
Club Z-South	73
Earthen Vessels-Seeds of Hope Church	17
East End Cooperative Ministry	11
Family Resources	2
Hill House Association	2
Huntington Learning Centers[1]	369
Schenley Heights	5
Youth Places	47

Educational Assistance Program (EAP)

In 2003-04, Pennsylvania established the Educational Assistance Program (EAP), which provides extended learning opportunities for students by funding tutoring. The tutoring can be provided before school, after school, weekends, and/or during the summer.[2] In total, school districts must provide a minimum of 45 hours per year of tutoring instruction per content area.

The EAP program is designed to target students who score below proficient on the state accountability test in tested grades or score below a set score (which is approved by the Department of Education) on a district-administered test. However, some districts, including Pittsburgh Public Schools, have expanded the services to a broader set of students beyond those who fail to meet test score thresholds. Initially, only students up to 9th grade were eligible to participate in the program, but in the 2005-06 school year, the program was expanded to all students.

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[1] Huntington Learning Centers operates in four locations.

[2] Starting in the 2005-06 school year, the state allowed districts to provide tutoring services during the normal school day, provided that doing so does not interfere with the students' regularly scheduled classroom instruction and does not supplant services required in a student's individualized education program.

WHAT DO WE CURRENTLY KNOW ABOUT OUT-OF-SCHOOL PROGRAMS?

Because the world of out-of-school programs is generally informal and not monitored by government agencies or institutions, only a fraction of all programs has been formally evaluated (Fashola, 1998; Roth et al., 1998; Bodilly and Beckett, 2005; Raley, Grossman, and Walker, 2005). In addition, because these programs are voluntary and because students who choose to participate in them may be quite different from the students who do not, it is challenging to accurately assess the programs' effectiveness. Generally, previous research has not been designed to control for these unobservable differences and as a result, it is difficult to draw aggregate conclusions about the overall effectiveness of these programs (Fashola, 1998; Chaplin and Puma, 2003; Hollister, 2003). In addition, not all programs are designed to improve academic outcomes, and for these programs we would not expect to see effects on achievement. What rigorous research does exist generally suggests that out-of-school programs can have modest positive effects on student outcomes (Fashola, 1998; Scott-Little, Hamann, and Jurs, 2002; Hollister, 2003; Lauer et al., 2003; Miller, 2003; Kane, 2004; Riley, Grossman, and Walker, 2005).

While the research focusing on student outcomes is sparse, even fewer studies have focused on the level of participation in these programs. However, a few studies have provided some insights. For instance, in a 1991 National Survey of Before- and After-School Care Programs suggested that these programs were operating at 59 percent of capacity (Sepannen et al., 1993). Other studies have generally shown that programs do not have waiting lists, an indication that there is not excess demand (Grossman, et al., 2002, U.S. Department of Education, 2003). A more recent study funded by the U.S. Department of Education suggested that nationally, only 17 percent of eligible students participate in the NCLB SES programs (Stullich, et al., 2006).

WHAT THIS STUDY ATTEMPTED TO DO

In this report, we examined the effectiveness of the SES and EAP programs in Pittsburgh Public Schools. Nearly 600 students received SES services and 6,000 students received EAP services in the 2005-06 school

year. Our analysis not only examined the overall academic effectiveness of these programs, but also examined program factors that were associated with gains in student achievement and higher student participation. Specifically, our analysis focused on the following set of questions:

1. What were the characteristics of students who participate in EAP/SES?
2. What were some of the barriers to student participation in these programs?
3. What effects did EAP/SES activities have on student achievement?
4. What EAP program factors were associated with gains in student achievement?

HOW WE ADDRESSED THE RESEARCH QUESTIONS

To address the research questions outlined above, we used student-level achievement and demographic data as well as survey and focus group data. These multiple sources painted a rich picture of the programs and allowed us to triangulate information to address our key questions in depth. These data sets are outlined below.

Student-level database

While the SES and EAP programs were not implemented until the 2004-05 school year, our analysis tracked student achievement trajectories before, during, and after the students participated in these programs. Therefore, our analysis used data from the 2000-01 to the 2005-06 school year from PPS's "Real-Time Information" longitudinal database. This database is a unique data source and contains detailed information characterizing many aspects of students' educational experience, including a student's participation in the SES and EAP program as well as his or her school, grade, test scores in math and reading, poverty status, and racial/ethnic characteristics.

In the period under examination, students in Pittsburgh took three kinds of annual achievement tests in reading and math, varying with the school year and grade. In consequence, we had no consistent scale on which to gauge absolute changes in student achievement over time. We

therefore converted all scaled test-score results into rank-based z-scores, by year and grade, with a mean of zero and a standard deviation of one.[3]

Survey Data

In the spring of 2006, we surveyed all SES private providers and all schools in the district providing EAP programs.[4] These surveys asked providers and schools about their implementation of the programs. Issues addressed in the surveys included:

- how the services were provided,
- how student progress was monitored,
- the makeup of the staff, including the percentage of staff with teacher certification and the experience level of tutors, and
- the frequency with which staff communicated with parents and teachers.

The questions in both surveys were primarily drawn from a previously fielded survey funded by the U.S. Department of Education designed to examine the implementation of SES across the nation (Stullich, et al., 2006), and because of this, along with our limited budget, we did not pilot the surveys. While there are unique questions

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[3] Specifically, we sort all student scores by rank then convert them to z-scores normed across the entire district-wide population of tested students in that subject and grade. This conversion does not require that students have the same rank on one test as on another, but it assumes that differences in the distribution of students on different tests are not correlated with the treatment of interest. Random differences in student ranks across different tests would introduce noise, but not bias, to the analysis. The conversion of scaled scores to rank-based z-scores means that we cannot make claims about the absolute amount of learning in one school or another (lacking a psychometrically valid developmental scale), but it permits an examination of changes in rank with fewer assumptions than would be needed under other kinds of scaling. For further discussion of the use of rank-based z-scores, see Gill et al. (2005).

[4] For both surveys, we asked the person who had the broadest knowledge of the programs to fill out the survey. Also, at the time of the survey, the district did not have ATS Consulting Services listed as a provider, so they were not surveyed.

in both surveys, the questionnaires largely overlap, which allow comparisons between the responses of SES and EAP providers.

These surveys enabled us to examine factors associated with student achievement gains by linking school- or provider-level responses to student-level performance. Ideally, an analysis would have this information at the student level. Nevertheless, connecting provider-level and school-level practices provided an opportunity to identify features that could lead to improved student achievement, which could be replicated by other providers and schools.

For the 2005-06 school year, nine organizations provided supplemental services to students within the district. However, one provider, Huntington Learning Centers, provided these services through four locations, and we treated each location as a separate provider for the survey purposes.[5] In total, we surveyed 13 providers, with 11 different providers responding (85 percent). For the EAP program, 77 individual schools within the district (out of 80 schools total) provided out-of-school services to students in the 2005-06 school year. All 77 schools were surveyed with 67 responding (87 percent). The response rates for both surveys are considered quite high for social science research.

Parent[6] Focus Groups

The focus groups were designed to provide information on barriers to and facilitators of child participation in the SES and EAP programs, with attention both to factors that have been identified in the literature as potential influences on participation (such as the scope and timing of programs and the support services or incentives they offer) and to those that parents of eligible children in the sample schools identified independently as pertinent to their communities.

Topics covered in the focus groups included the following:

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[5] It should be noted that we did find some variations across the Huntington Learning Center sites across many of the survey questions.

[6] We use the term "parent" for simplicity's sake. In reality, focus group participants included students' parents, grandparents, aunts and uncles, foster parents, and legal guardians.

- parents' perceived need for their child to be tutored,
- parents' understanding of program options (EAP, SES, other community programs),
- program factors affecting family participation (e.g., duration, content, accessibility, source, perceived quality, incentives),
- outreach factors affecting participation (e.g., access to and clarity of eligibility and enrolment information, advocacy by school staff or others, community support or stigma),
- parents' overall satisfaction with services received and reasons for this level of satisfaction, and
- factors that could influence their own future participation or that of others.

We sampled ten schools that offered EAP, SES, or both programs. Schools were selected to represent differences by geography, ethnicity, income, and overall school performance in the PPS, and included five elementary schools, three middle schools, and two high schools. The district assisted in sample selection by suggesting schools that had participation rates and schools where programs were having little success in recruiting and retaining students.

Given the small scale of the study and the specific issues of participation and satisfaction that the district wished to pursue, broadly representative parent samples were attempted, rather than purely random samples. We requested from each school contact information of parents of students from our target groups (EAP participants, SES participants, and non-participating students who are eligible for either of these programs), then planned to sample within those lists by gender, ethnicity, and residence to select five parents for the focus groups.

Two factors affected the ultimate invitation sample within buildings, however. First, we received widely differing responses from the sample schools. Three schools sent us lists of all eligible students in each group, which allowed us to sample more effectively. Other schools, when asked to provide such comprehensive lists, declined.

Three schools provided us with shorter, targeted respondent lists, suggesting people with whom they thought we should speak to get positive and negative views of the programs.

Low participation in the focus groups created a second sampling complication. Low respondent turnout in our early school visits led to a gradual increase in the number of parents we invited to participate in schools scheduled for later visits. Eventually, we invited up to ten parents per group in our last four schools (although with little corresponding increase in attendance, as we discuss below).

To encourage turnout, we offered a $50 incentive payment for participation in the group, to defray travel and opportunity costs to participants. Nevertheless, overall participation remained low. Of a total of 155 invitees, 70 indicated that they or a delegated other intended to participate, but only 41 actually attended the focus groups. Participation was lowest among middle school parents (only 6 of 64 invitees attended) and among the parents of children eligible for but not participating in the programs (only 7 of 50 invitees attended). This latter result is unfortunate given the district's strong interest in understanding why eligible students do not participate, but it is not unexpected.

Given the sampling and participation issues we have discussed, the data we collected cannot be considered to be representative of the experiences of all families eligible for the EAP and SES programs in the Pittsburgh Public Schools. However, as we will discuss in chapter 2, it does highlight a number of shared concerns and interests among the families with whom we spoke, and this information can be helpful in considering program adjustments in the future.

OUTLINE OF THE REPORT

The outline of the rest of the report is as follows: Chapter 2, through the analysis of survey and focus group data, provides a description of the operation of the SES and EAP providers as a context to chapters 3 and 4. Chapter 3 highlights participation patterns across the two programs and factors that may affect participation. Chapter 4

provides the results of our achievement analysis. Chapter 5 summarizes the results and presents conclusions.

2. OPERATION OF PROGRAMS

This chapter describes the implementation of the SES and EAP programs as represented in our survey data (and to some extent in data from our focus groups). Before presenting the results, we remind the reader that the SES program is provided by private organizations outside of the district's control, while schools themselves deliver the EAP program. Therefore, the SES survey was filled out by SES organizations while the EAP survey was filled out by schools. In both cases, we asked the organizations and schools to have the person who has the broadest knowledge of their program to fill out the survey.

Because the two surveys have many of the same questions and as a way to provide context to the survey responses, we compare the responses between the SES organizations and EAP schools. While a wide array of questions was asked across the two surveys, we only highlight the responses that help address our research question about factors that are likely to affect participation or student achievement.

We should also reemphasize that while we did achieve a high response rate among the SES organizations (11 out of 13 responded) and among the EAP schools (67 out of 77 schools responded), these are still relatively small samples sizes (especially for the SES survey) and the results should be viewed with some caution.[7] As a result, when making comparisons between the responses from SES organizations and EAP schools, we do not use any tests to examine whether the responses are statistically different, and we generally refrain from making too many inferences about the reasons for the differences. Instead, we present our results as patterns that may provide insights into the practices of the two programs.

Where relevant, we present information from the parent focus groups to shed light on or add additional context to the results from the survey analysis.

STAFFING

First, we examine the staffing of tutors in Exhibit 2.1. The pattern of responses suggests differences in philosophies in staffing tutors. Three out of eight (or 38 percent) responding SES organizations indicated they require tutors to have prior classroom experience

[7] Response rates also vary by individual items within the surveys.

compared with 46 out of 65 (or 70 percent) responding EAP schools. Similarly, SES organizations responded that 29 percent of their tutors are district teachers relative to 82 percent for EAP schools. These patterns do suggest that SES organizations place less emphasis on classroom teaching experience than EAP providers.

Also of note, 10 out of 11 (or 91 percent) responding SES organizations indicated that they require academic training in specific areas in which the staff is tutoring compared with 26 out of 61 (or 43 percent) responding EAP schools. In addition, six out of nine (or 67 percent) responding SES organizations indicated that they require prior tutoring experience compared to 30 out of 64 (or 47 percent) responding EAP schools.

It is interesting to note the views among parents were inconsistent about the use of teachers as tutors, especially among parents of students in the EAP program. Many parents, especially in elementary schools, preferred and appreciated having regular classroom teachers as EAP staff. These parents noted that the teachers' knowledge of the subject matter and sense of what was being covered in the regular curriculum made them better able to focus tutoring content, and that their knowledge of individual students from their regular teaching allowed them to target individual enrichment. Other parents, however, criticized the use of regular teachers as tutors. Arguing that these teachers have apparently not been able to support student learning in the regular classroom (otherwise why would the children need tutoring?), they believed that they should not serve as EAP staff.

Interestingly, this tension was not present in discussions of SES staffing. Tutors in these programs were broadly praised by parents, and considered to be highly effective, even when their actual educational credentials were unknown. SES tutors seemed to be valued mostly for their individual focus on students, rather than for their subject matter expertise – with individual attention, parents felt, students were better able to grasp the subject matter themselves.

Exhibit 2.1 Staffing for SES and EAP programs

	SES Organizations	EAP Schools
Percent of providers that require tutors to have prior classroom experience	38	70
Percent of providers that require prior tutoring experience	67	47
Percent of providers that require four-year college degrees	67	55
Percent of tutors who are district teachers	29	82

GROUP SIZE AND WAYS OF GROUPING STUDENTS

Exhibit 2.2 highlights the patterns of grouping students in both the SES organizations and the EAP schools. The SES organizations responded that their average student-tutor ratio is 4.1 to 1 student, relative to 9.7 to 1 for EAP schools. This difference is consistent with the fact that only one out of nine (or 11 percent) responding SES organizations indicated that it often or always tutors students in groups of five or more students— compared with 39 out of 66 (or 59 percent) responding EAP schools. Similarly, six out of 11 (or 55 percent) responding SES organizations indicated that they often or always tutor students in one-on-one sessions compared with nine out of 61 (or 15 percent) responding EAP schools. These patterns were reflected in the parents' comments; parents perceived the SES organizations as having fewer students per teacher. They strongly valued these intimate settings, believing that they led to closer and more positive relationships between students and staff.

Another factor that might affect the success of these tutoring programs is the extent to which they address individual students' needs. Students who participate in these programs are generally low-performing, as we show later in this report, but there is extensive variation in the achievement levels of participants. Programs that group students by prior skill level might have different outcomes than those that provide tutoring to groups with varying skill levels. The SES and EAP programs appear to differ in this respect: all ten of the responding SES organizations indicated that they group students by skill level compared with 43 out of 62 (or 69 percent) responding EAP schools.

Exhibit 2.2 Grouping of Students

	SES Organizations	EAP Schools
Average student-tutor ratio	4.1	9.7
Percent of providers that often or always group students in groups of 5 or more students	11	59
Percent of providers that tutor students in one-on-one sessions	55	15
Percent of providers that group students by skill level at least part of the time	100	69

ATTENDANCE PATTERNS

Obviously, getting students to participate is important to the success of these programs. In chapter 3, we examine participation patterns in greater detail, but here we present self-reported attendance patterns from the surveys. As highlighted in Exhibit 2.3, the SES organizations reported that on average 97 percent of their students attended at least half of their scheduled sessions, with 69 percent of students attending at least three-fourths of their sessions. On average, EAP schools reported that 76 percent of the students attended half their scheduled sessions, and 58 percent attended three-fourths of their sessions. In addition, SES organizations were much less likely than EAP schools to have students who attended fewer than a quarter of their scheduled sessions.

Exhibit 2.3 Overall Attendance Patterns

	SES Organizations	EAP Schools
Percent of students who attend at least 75 percent of their scheduled sessions	69	58
Percent of students who attend between 51 and 75 percent of their scheduled sessions	28	18
Percent of students who attend between 26 and 50 percent of their scheduled sessions	2	11
Percent of students who attend less than 25 percent of their scheduled sessions	1	12

We probed respondents about the number of sessions students attended each week, with the results displayed in Exhibit 2.4. When comparing the responses of the SES organizations and EAP schools, the exhibit suggests inconsistent patterns. On average, EAP schools reported having 44 percent of students attending tutoring sessions at least three or more times per week compared to more than 36 percent of students for SES organizations. However, EAP schools also reported having 22 percent of students attending tutoring sessions once a week or less, compared with 5 percent for SES organizations.

Exhibit 2.4 Attendance Patterns: Number of Sessions per Week

	SES Organizations	EAP Schools
Percent of students attending tutoring sessions less than once a week	0	5
Percent of students attending tutoring sessions once a week	5	17
Percent of students attending tutoring sessions twice a week	59	34
Percent of students attending tutoring sessions three or more times a week	36	44

COMMUNICATION

Because these programs operate outside normal school hours, it may be important that the staff effectively communicate with teachers and

parents to coordinate instruction and improve attendance. In our surveys, we asked how often tutors communicate with teachers. As noted in Exhibit 2.1, it turns out that most of the EAP schools use classroom teachers as tutors, with 39 out of 62 (or 63 percent) responding EAP schools indicating they use classroom teachers. Of the remaining 23 schools, 11 (or 17 percent of the total) responded that tutors talk with teachers a few times per week. In total, as indicated in Exhibit 2.5, 80 percent of responding EAP schools either use classroom teachers or communicate with teachers a few times per week. In contrast, no SES organization used classroom teachers as tutors and only two out of nine (or 22 percent) responding SES organizations communicated with teachers a few times per week. This suggests that the schools using the EAP program may be more likely than SES providers to coordinate their tutoring with the instruction students receive in their regular classrooms.

These results were only partially reinforced by the comments from parents. Parents noted that they were unsure whether SES tutors were in contact with classroom teachers, but also noted (in the cases where EAP personnel were not regular subject teachers), that they were quite certain that this communication was not happening in their schools' EAP programs. Most stated that they would like to see more teacher-tutor coordination as a way of making sure that students are broadly supported, but it is not clear whether parents would reliably know whether there is communication between teachers and tutors.

Exhibit 2.5 Communication with Teachers and Parents

	SES Organizations	EAP Schools
Percent of providers that either use classroom teachers or communicate with classroom teachers at least a few times per week	22	80
Percent of providers that communicate with parents at least a few times per month	91	51

In terms of communication with parents, the responses from the surveys suggest that staff from SES organizations talk with parents more often than do the EAP school staff. Ten out of 11 (or 91 percent) responding SES organizations indicated that they communicate with

parents at least a few times per month, relative to 34 out of 67 (or 51 percent) responding EAP schools. However, in the focus groups, parents indicated that this level of communication was not sufficient. For instance, many parents reported receiving no initial assessment information about what specific skills or areas their children needed to address, beyond a generic "math" or "reading" support recommendation. Parents found this lack of information about student needs to be particularly problematic for the EAP program.[8]

Many parents also complained of an absence of ongoing monitoring and communication about student progress, especially for students in the EAP program. However, not all parents shared this view. Some said individual tutors had taken the initiative to contact parents about their children's progress, while others in the same school reported that they knew nothing about the actual activities in which their children were engaged.

Also, parents who participate in both programs reported that the SES programs provided more and better information on student progress than the EAP programs. While most EAP parents reported never receiving a progress report, many of the SES parents could describe in some detail the reports they had received from their SES providers on their children's progress.

It should be noted that for many of the parents with whom we spoke the absence of information was accepted as normal and was not a cause for dissatisfaction with the program. If they were certain that their children were in a safe place after school hours and saw improvements in their grades, they were satisfied with the program.

While the above information is enlightening, greater light can be shed on these results by understanding the challenges of communicating with parents. As highlighted in Exhibit 2.6, SES organizations and EAP schools both report that parent’s work schedules are the greatest challenge to effective communication with parents. Twenty-six out of 48 (or 45 percent) responding EAP schools and four out of 11 (or 36 percent) responding SES organizations indicated that parents’ work schedule was a moderate or serious challenge to successful

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[8] Some parents assumed that the schools were assigning students to EAP programs based on their grades. Others thought that programming was based on the Pennsylvania System of School Assessment (PSSA) results, or on other test results that parents had not seen. While parents understood that the PSSA scores were broken down in great detail, many were confused by the test reports they had received from their schools, and were not certain of the particular areas in which their children were performing most poorly.

communication. Of the remaining barriers, the lack of phone and email access for parents was most often indicated as a challenge. However, it is interesting to note that parents cited phone calls and emails along with individual teacher visits or meetings as effective means of making sure that parents know what's going on, and suggested that these methods be used more broadly to engage them in their children's education. However, the parents that showed up for the focus groups are the ones with phones (and are probably more likely to have email) and colors their view of the effectiveness of communication by phone and email.

Exhibit 2.6 Percent of Providers Indicating the Following Factors as Moderate or Serious Challenges for Successful Communication

	SES Organizations	EAP Schools
Work schedule of the parents	36	45
Language barriers	0	5
Work schedule of the instructional staff	18	34
Parents lack of access to a telephone	27	31
Parents lack of access to email	36	34

BARRIERS TO PARTICIPATION

It is important to know what barriers to communication exist in the program, which was included as a series of questions in our survey. First, we asked whether the provider was able to serve all the students who had requested services. Ten out of 11 (or 91 percent) responding SES organizations said they could.[9] Similarly, 52 out of 65 (or 80 percent) responding EAP schools said they could serve all the students who had requested services. On average, the EAP schools that could not meet the demand had nearly 24 more students requesting services than they could serve. Twelve of the 13 EAP schools that could not accommodate all the students cited the lack of staff as the primary reason for their inability to accommodate these students.

Beyond capacity, another possible challenge to participation is transportation, which parents highlighted as an issue in our focus groups. Forty-six out of 67 (or 69 percent) responding EAP schools

[9] The remaining organization that responded negatively noted that this was not because it did not have capacity, but rather because some non-Title I students requested services when they were not eligible.

indicated that they provided transportation to students. The SES survey did not have a similar question.

SUMMARY

In this chapter, we presented findings related to the implementation of the SES and EAP programs, including differences in program staffing, grouping of students, attendance patterns, communication with teachers and parents, and perceived barriers to participation among providers. These results not only provide interesting insight into these programs, but also serve as context for our analysis in chapters 3 and 4, in which we examine whether the patterns highlighted from the survey data are associated with greater student participation and improved student achievement.

3. PARTICIPATION IN SES AND EAP

One of the key objectives of out-of-school programs is to improve student learning. However, to achieve this objective, it is essential that students regularly participate in these programs. In this chapter, we examine the participation patterns of the district's SES and EAP programs. We first display the overall participation rates by year, which indicate that these programs have generally been underutilized. To explore the reasons why and to provide context to our later analysis, we then describe information garnered from the parent focus group about why parents do or do not choose to participate in these programs. Then, we examine participation across different student characteristics and examine attendance patterns for the EAP program (we do not do this for the SES program because of a lack of data). Finally, we use information from the survey data to determine whether certain factors of the SES and EAP programs are associated with higher levels of participation or attendance.

PARTICIPATION RATES

Both the SES and EAP programs have been operating since the 2004-05 school year. While the SES program is designed to target low-income (Title I) students only, the district implementation of EAP has encompassed a broader set of students. However, it should be noted that a student eligible for the SES program can also participate in the EAP.

Exhibit 3.1 shows the level of participation in these programs across the two school years. While the EAP program has a substantially higher number of participants, the proportion of eligible students who participate in EAP is similar to that for SES. Also, the participation rates across the two years increased at similar rates across the two programs and by the 2005-06 school year, had participation rates similar to the national average for SES programs (Stullich, 2006). Finally, it is interesting to note that while only 18 students participated in both the SES and EAP programs in the 2004-05 school year, 271 students participated in both in the 2005-06 school year.[10] These 271 students

[10] The participants of "both" program in the exhibit is a subset of the students that participated in the SES and EAP programs. So, in the 2004-05 school year, there were 18 out of the 98 SES students that participated in both programs. Similarly, 18 out of 1,665 EAP students participated in both programs.

represent nearly half of all students who participated in the SES program in that year.

Exhibit 3.1 Participation Rates

Program		2004-05 School Year	2005-06 School Year
SES	Participants	98	567
	Eligibles	2,067	2,699
	Participation Rates %	**4.7**	**21.0**
EAP	Participants	1,665	5,939
	Eligibles	22,991	30,662
	Participation Rates %	**6.8**	**19.4**
Both[11]	Participants	18	271
	Eligibles	2,067	2,699
	Participation Rates %	**0.1**	**10.0**

Not shown in the exhibit, but also of interest, is the number of students who participated in the SES or the EAP programs for both years. Thirty students out of 516 students (or 5.8 percent) who could have participated in the SES program in both years did so, compared with 625 students out of 21,367 (or 2.9 percent) for the EAP program. While we have no insight into why this might be, it would be interesting to know why so few students participated in these programs for both years.

Low participation rates have caused concern in Pittsburgh as well as in districts across the nation. Below, we examine possible reasons for the low participation rates through data collected through parent focus groups, the district data system, and surveys.

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[11] Eligible students for the "both" program are students that are eligible for both the SES and EAP program in the same year. Because virtually all students are eligible for the EAP program, the eligible students to participate in both are the students that are eligible for SES.

INSIGHTS FROM PARENTS

Within the context of this evaluation, the parent focus groups were intended to provide information on barriers to and facilitators of child participation in the SES and EAP programs.[12] As a reminder, we generally had low participation rates among the parents invited. Thus, the data collected cannot be considered to be representative of the experiences of all families eligible for the SES and EAP programs in PPS. However, it does provide a number of shared concerns and interests among the families with whom we spoke, and this information can be helpful in considering program adjustments in the future.

Enrollment Issues

Parents in our sample raised a number of issues about the ways in which students are recruited into and enrolled in the EAP and SES programs. Many parents in our focus groups indicated that initial communication between the district and families about the options available to them under NCLB was inconsistent and unclear. Parents expressed strong criticism of building administration in many of our sample schools, arguing that administrators provided little outreach to families and even less support when families expressed interest in getting more information on SES programs and other tutoring options. In two of our sample schools, administrators were cited by most parents as helpful and proactive, but parents in the rest of the schools complained about an inability to contact school leaders, a lack of interest on the part of school leaders in parents' efforts to obtain information, or a lack of knowledge by administrators about program options.

Across the sample, however, many parents cited individual teachers as very helpful in connecting students to assistance of various kinds. Parents referenced teachers as one of the key factors in identifying a child's need for tutoring, and as an important source of accurate information about the SES and EAP programs and other community efforts. Several parents also indicated that teachers had provided additional tutoring for their children on their own time (after or before school). Some non-participating parents reported that this independent teacher tutoring was sufficient to meet their children's needs.

Parents in our sample reported receiving/having access to multiple sources of information about options for student support. Aside from one elementary school in which all parents received a monthly newsletter and

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[12] For more details about the design and recruitment for the focus group, see chapter 1.

email updates from dedicated EAP support staff, parents within in all of the remaining schools varied in their reports. Some reported getting their information about EAP and SES programs directly from the school (usually in a letter or notice sent home with students), others from individual teachers, and still others from additional sources (Club Z billboards at bus stops, for example, or student word of mouth).

These multiple sources of information may increase the chances that parents learn about and eventually use the programs. However, some seem more likely to be effective than others. Letters were a particular source of debate among parents. While some reported regularly checking for and following up on such mailings, many others reported not receiving them or not understanding the content. Many parents viewed letters sent home in backpacks as an uncertain means of communication, as so much other "junk" gets sent home as well and students do not always deliver what they are asked to carry.

Parents in our focus groups generally did not find PTO/PTAs to be appropriate alternatives for communication. Few of the parents whose children are eligible for SES, in particular, participated in these organizations, and they were often seen as exclusive and somewhat frivolous by our respondents.

Many of our respondents reported confusion about who is eligible for EAP and SES programs and why. Some parents were not aware that EAP programs are voluntary. Others did not understand that SES tutoring is free. Few could describe the conditions for enrolment in the programs offered at their schools, and several cited obvious inconsistencies. Parents in two elementary schools and one high school, for instance, claimed that honor roll students had been targeted for the EAP, when the actual target of struggling students were not.

Parents reported significant frustration with the income eligibility guidelines for SES, which they generally believed to be a "better" program than school-offered EAP efforts. Parents whose children were struggling academically but not eligible for SES felt that the guidelines excluded marginal and needy populations from these reportedly more effective programs, and questioned the ways in which the district distinguished among children in need of academic support. One elementary school reportedly sent SES invitation letters to all parents with a handwritten note on the top indicating that only income-eligible families could actually apply, which ineligible parents saw as exclusionary and an indicator of the administration's lack of interest in them, except when mandated by NCLB.

Many of our respondents were unaware of options other than the in-school EAP and SES programs. Some parents reported few community-based

programs in their neighborhoods and expressed a lack of willingness to ask their children to travel to other locations for tutoring when that was presented by the district as the only option for a child (for instance, in schools where EAP programs were over-enrolled or where SES providers did not offer in-school programming). Parents' reasons for preferring a local site included unwillingness to travel into what were perceived to be dangerous low-income neighborhoods, the additional time and perhaps expense involved in transporting students to remote programs, and the simple inconvenience of not having close and immediate access to services.

Across our sample of schools, parents encouraged administrators to pursue alternative means of outreach to increase parent understanding of the programs and their benefits and to raise participation rates. Suggested options included the use of radio and television advertisements, billboards like those currently posted by Club Z, and better engagement by the schools with churches and other social service providers. For many parents, the ideal source of information and recruitment was a home visit by program staff to eligible families, but these parents also recognized the prohibitive costs of such outreach.

Content and structure issues

We found significant differences of opinion across the sample and within individual schools about the content and structure of programs but also identified some common themes. Parents varied in their assessments of and preferences for content, structure, incentives and staffing. However, they shared concerns about discipline, safety, and group sizes. Most parents who attended our focus groups felt that almost any kind of enhancement program was of benefit, but they did have suggestions for improvement in the existing programs.

Most parents stated that they valued the academic reinforcement of both the SES and the EAP programs. However, they did not agree on the extent to which the additional "social" or "fun" content (such as field trips, sports, and entertainment) of some schools' EAP efforts is valuable. Some parents viewed such activities as both a good incentive for student participation and an important nod to the fact that children need to be engaged in a variety of safe and stimulating activities. Others argued that including such activities in a program that is intended to improve academic performance is a waste of time that could better be spent on skill-building.

This variation in preferences related to program content was true of parents' views of program incentives more broadly. Some forms of incentives, such as vouchers for school uniforms, gift certificates to

bookstores, or passes to museums were broadly viewed as positive by our respondents, because they were either directly related to the school or perceived as directly supporting learning. Other incentives, such as movie passes and pizza parties, had less appeal for some parents, because they seemed to be more about the reward than about learning.

Indeed, many of the parents attending the focus groups asserted that academic success should be an incentive in and of itself, and that offering students rewards for attendance sends them the wrong message about responsibility and persistence – qualities they will need to develop to succeed in life. Interestingly, even parents who supported the idea of learning-related incentives were skeptical of the ability of such enticements to affect participation rates in any meaningful way, unless they were offered frequently and for fairly low standards of attendance.

Parents were nearly unanimous in their belief that food should be provided as a component of any after school program. However, they were generally unhappy with what is actually provided for students participating in the EAP and SES programs. In many schools, parents reported that students were provided with junk food – a candy bar or a small package of cookies or chips – and complained that this was simply providing students with a "sugar rush," not with nutrition to support learning.

Parents had mixed views of the importance of transportation as a factor in participation in the programs. Many parents in our sample lived close enough to their children's schools to feel comfortable with them walking home or were able to arrange their schedules or enlist others to ensure that children were picked up when the day was over. Although transportation was very much appreciated when provided, concern about how to get students home appeared to be not so much an issue of convenience as one of safety. The absence of transportation was reportedly more of an issue in the winter, when weather and darkness increase parent reluctance to have students stay late or be far from home. Transportation concerns were similar for parents of EAP and SES students. They were, however, more of an issue for parents who had children referred to off-site SES programs, including Saturday sessions, than for those whose children attended programs at their schools.

Parents also had differences of opinion about the appropriate duration of programs. Some, especially in schools where programs were only offered one or two days a week, wanted more tutoring time. Others, often in schools where more time was dedicated to academic tutoring, said the programs were already too intense and that children were losing the opportunity to do non-academic things or to simply "be children."

Programs serving students in higher grades also reportedly conflicted with other after-school activities in which children wished to participate. Several parents reported that their children had to choose between tutoring and athletics. Others reported a conflict with art and music activities or with work opportunities for students in high school. High school parents in particular argued that when a child had to choose between additional tutoring and making money, tutoring was likely to lose out, and encouraged schools to develop enrichment programs that could operate during regular school hours.

Parental Satisfaction and Long-Term Participation

Whether students participate in these programs long term is partially a function of how satisfied parents are with the programs. During our focus groups, parents expressed that they are generally satisfied with the programs if they see their child learning and grades improving. However, parents did express some frustration with the programs in ways that may affect long-term participation.

Some parents, especially at the high school level and in schools with intensive SES programs, expressed concern that the programs were not intended to build sustained understanding in students but were intended simply to get them to a point where their PSSA performance reached levels that would protect or benefit the district. Other parents saw the tutoring as only teaching to the test and made some parents uncomfortable, but others saw such programming as a useful contribution to their efforts to improve their children's performance.

In fact, many parents reported not knowing what went occurred in the EAP programs, beyond the provision of homework time for students, and many were uncertain of the quality of these programs. In schools with dual EAP and SES options, SES was the clear preference for both parents of children in both programs and for parents of children in SES or EAP only. Most parents agreed that EAP is better than nothing, except in the high schools, where the value of the program was broadly questioned. No high school parents in our sample were interested in participating in their school's EAP programs in the future.

One reason parents preferred the SES programs was because they were perceived as having fewer students per teacher and closer and more positive relationships between students and staff. Many parents believed that their children's academic problems originated in or were compounded by a lack of individual attention in the regular classroom; thus a program with smaller groups (or even better, one-on-one attention) was appealing to them. Many parents noted that their

schools' EAP programs had high student-teacher ratios and these parents encouraged the district to find ways to reduce those figures.

Another issue that affected parental satisfaction with these programs was a concern among parents about how to deal with disruptive students in EAP programs, and about the effect of their presence on others' learning. Parents approached this issue from two perspectives. Some reported the presence of highly disruptive children in the programs and worried about issues of safety and of a loss of quality time for their own children as a result of teacher focus on discipline. These parents questioned how the EAP was better than the regular classroom, if the same high concentration of disruptive children were present in both contexts. On the other hand, we also spoke with a number of parents of children with behavior management or other discipline problems, and these individuals were very concerned about the marginalization or exclusion of their children when the focus is on improving academic performance. Both categories of parents again suggested smaller groups or individual tutoring as a way of making sure that all students get the help they need.

Parents also reported that in several of our sample schools no effort was made to mandate and enforce attendance in EAP tutoring or even to record the presence or absence of children on particular days. This posed a serious concern for parents, because they could not be sure that their children were in fact attending the program. Parents were worried about the academic effect of students not attending, but of greater concern was the safety issue of not knowing where children were who claimed to be at EAP programs actually. This concern was particularly common among parents of students in grades 6 and up. Monitoring and enforcement of attendance was one reason that some non-participants had chosen to move their children to community agency programs, and also a reason that some participating parents were considering moving their children in the coming year.

Parent-identified Barriers to Participation

As one of the district's key goals for this evaluation was to understand why EAP and SES program participation is uneven across the district and often disappointingly low, we asked parents in a variety of ways about both the factors that encouraged them to participate in the programs and those that discouraged them. As we have noted, the simple fact that additional support was available for struggling children was often the primary reason for our respondents to enroll their children in the programs. For SES-eligible children, the more individualized nature

of those programs made them more appealing than the EAPs offered in the same schools, although many of our participants had placed their children in both EAP and SES tutoring. Knowing that children were in a safe and structured environment also had a strong influence on our respondents' decisions to participate.

Barriers to participation, as identified by parents in our focus groups, were more diverse. Some of these barriers were identified by parents who had opted out of the programs (respondents in our non-participant groups). Others were suggested by parents who had chosen to participate, reflecting on their own misgivings or challenges and on the reasons why their peers had or may have chosen not to take advantage of the programs. For the latter group, these suggestions were largely speculative, but they do reflect an understanding of the challenges faced more broadly by the population of whom our respondents were loosely representative.

In no particular order, the key barriers to participation as identified by our respondents were as follows:

- No perceived need for tutoring for the eligible student,
- Satisfaction with alternative sources of support for the eligible student (e.g., a community organization, church after school program, or private tutor),
- Transportation problems,
- Lack of incentives,
- Uncertainty about program content and goals,
- Poor communication by schools to parents about the programs,
- Mistrust of schools and school staff,
- Scheduling conflicts,
- Stigma (SES participants, in particular, seen as "dummies"), and
- Lack of parental attention to schooling

This last factor was cited in all of our sample schools, primarily by parents and guardians who had chosen to participate in the programs. These parents had a strong sense that district efforts are largely unlikely to reach the children most in need of the programs, because their poor performance in school is not simply a matter of failing to understand curricular content.

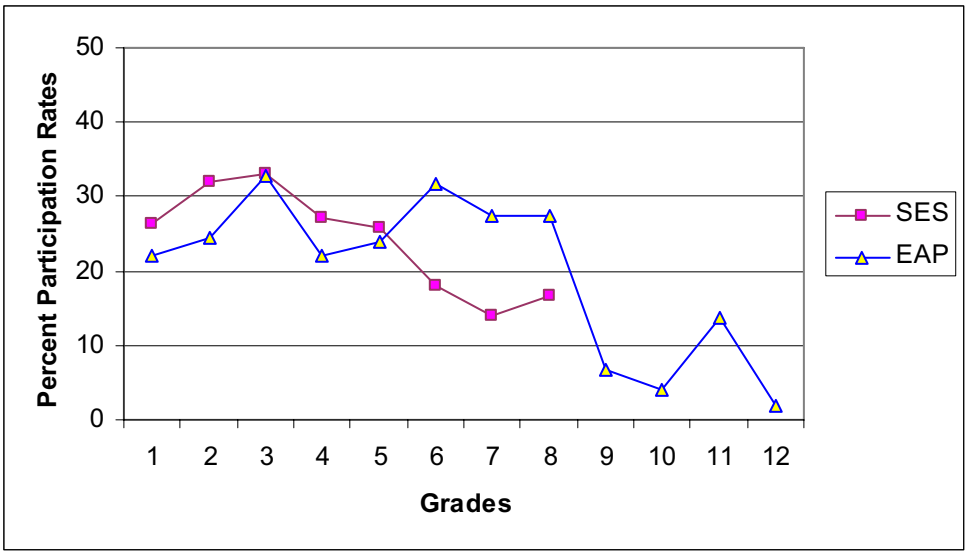
PATTERNS OF PARTICIPATION BY STUDENT CHARACTERISTICS

While the information gained from parents provide insights into the participation patterns, it is important to keep in mind the small size and unrepresentative nature of the sample. An accurate understanding of participation requires an understanding of the characteristics of students who do and do not participate.

In the focus groups, parents indicated that it is more challenging to get middle and high school students to participate because of competing demands for their time, including athletics and other extra curricular activities (and, at the high school level, jobs). Furthermore, there may be a social stigma associated with being tutored at the middle and high school level. Therefore, we examine the level of participation grade-by-grade for the 2005-06 school year in Exhibit 3.2.

The exhibit suggests different patterns between the SES and EAP programs. While SES participation rates drop substantially when students enter into middle school grades, EAP does not exhibit a similar decline. However, there is a significant decline in participation at the high school level for the EAP (high school students were not eligible for SES). In addition, we should highlight that there is a spike in participation in the EAP program in 11th grade. One possible reason for this is that the schools are putting forth greater effort to get 11th graders to participate in hopes of preparing the students for the state accountability test that is only given in 11th grade at the high school level. If true, this suggests that there is potential to get more students participating at the 9th, 10th, and 12th grades.

Exhibit 3.2 Participation Rates by Grade for 2005-06 School Year



In Exhibit 3.3, we display the participation rates by race among students eligible for the most recent school year. For SES, the racial distribution is fairly similar between participants and eligible non-participants. For EAP, African-American students are overrepresented as participants while white students are underrepresented.

Exhibit 3.3 Comparisons of Participation by Race for the 2005-06 School Year

Race	SES		EAP	
	Participation	Non-Participation	Participation	Non-Participation
Black	84.5	83.4	69.9	54.1
White	12.9	12.7	25.0	39.5
Others	3.6	3.9	5.1	6.4

Exhibit 3.4 examines the achievement levels of students participating in these programs in the year prior to the student receiving services. Achievement levels are normed within the district with a mean of zero and standard deviation of one across all tested students. Negative values are below district averages while positive values are above district averages.

Interestingly, the comparisons not only show differences in the achievement levels between participating and non-participating students, but also between the students participating in the SES and EAP programs. For the 2005-06 school year, the achievement levels of students participating in the SES and EAP program are generally substantially lower than those for non-participating students, with a difference of between 0.2 and 0.3 standard deviation.

Comparing the achievement levels of students who participate in the SES versus the EAP program, the exhibit suggests that the EAP students are higher-achieving students, by 0.2 to 0.3 of a standard deviation, which, again, is a substantial amount. These differences may be partially explained by the fact that SES program is targeted towards low-income students, while the district's implementation of EAP has been available to nearly all students.

Exhibit 3.4 Prior Achievement Levels of Students Participating in SES and EAP

Test Score	SES		EAP	
	Participation	Non-Participation	Participation	Non-Participation
Prior Math Z-Scores	-0.55	-0.32	-0.24	0.07
Prior Reading Z-Scores	-0.46	-0.34	-0.24	0.07

Estimating Patterns of Participation

While the descriptive results provide initial insights into the differences between participants and non-participants, we also examine these differences using a probit analysis that simultaneously assesses the contribution of multiple student characteristics in predicting the probability that a student is a participant. This approach is often used when examining dichotomous outcomes such as participation in programs (Maddalla, 1983).

We conduct separate probit analyses for SES and EAP. For each analysis, the outcome variable is whether the students used the option. The independent variables describe the relationship between the student characteristics and the probability of participating. We restrict the analysis to students who were eligible for SES or EAP, so that the

analysis is examining student characteristics that distinguish eligible participants from eligible non-participants.

The probability of using SES or EAP is modeled as a function of a vector of characteristics associated with each student, as indicated in Equation 3.1,

$$y_i = \beta' x_i + \lambda p_i + u_i \quad \textbf{(Equation 3.1)}$$

where y_i represents whether student i participates in SES or EAP; x_i is a vector of dummy variables of student i's race indicating whether the student is African-American or non-African-American, non-white student (white is the omitted category and the comparison group); p_i is the prior achievement level of student i as measured by average reading scores,[13] and finally, because parents and districts suggested that it is challenging to get middle and high school students to participate in out-of-school programs due to competing activities and the stigma associated with tutoring, we include g_i as a vector of dummy variables indicating whether the student is in middle (6-8) or high school (9-12) grades (with elementary grades being the omitted category and thus the comparison group); and u is the random error term. We should also note that because student decisions may be correlated within schools, the analysis clusters students within schools to create robust standard errors.

In a second analysis, we expand Equation 3.1 by including information collected through the surveys as represented by s_i in Equation 3.2. Because the survey data only include information from the 2005-06 school year, for both this, and the analysis above, we focus on the 2005-06 school year.

$$y_i = \beta' x_i + \lambda p_i + \delta s_i + u_i \quad \textbf{(Equation 3.2)}$$

The inclusion of predictors from the survey data is dictated by what we learned from our focus groups as well our discussions with district officials. For instance, both parents and district officials highlighted that transportation for students may be an issue. Also, district officials noted that lack of staff for tutoring often precludes EAP schools from meeting the needs of all students, which was also noted

[13] We did not include both reading and math because they are highly correlated.

as a challenge by the respondents of the EAP survey. Therefore, we include information about whether transportation is provided to students and whether the program has sufficient staffing. However, because we did not ask the SES respondents about these issues, this analysis focused only on participation in EAP.

One final extension to this analysis is an examination of attendance. One could easily argue that consistent attendance is an essential ingredient to the success of these programs. While we generally do not have this information for SES students, we do for EAP students. As a result, we examine factors associated with student attendance through Equation 3.3.

$$a_i = \beta' x_i + \lambda p_i + \delta s_i + u_i \quad \textbf{(Equation 3.3)}$$

Here, the outcome measure a_i is a continuous measure of the number of days a student attends the EAP program. The rest of the model is the same as Equation 3.2 except s_i includes a larger array of survey information. Within the survey, we asked what mechanisms the school uses to improve attendance for EAP, including whether they use reminder phone calls, emails, or mailings, have classroom teachers speak to students, create rewards for student attendance, or send material home with students. For each of these mechanisms, we create a dummy variable indicating whether the school used the mechanism and these variables are included in the analysis in addition to the variables used in Equation 3.2 of whether the school provides transportation and whether the school has sufficient staff to run the program.

Results

Exhibit 3.5 presents the results of our basic probit analysis specified in Equation 3.1. The interpretation of raw output of the model is complicated somewhat by the fact that the coefficients reflect changes in standardized deviations. Because thinking of relationships in terms of standard deviations can be difficult, we convert the coefficient outcomes into changes in probabilities at the mean values for continuous variables and the change from 0 to 1 for discrete variables. To better illustrate the meaning of the coefficients, we provide an example. If the analysis produces a positive coefficient estimate of 0.01 for African-Americans for participation in SES or EAP, the interpretation of this coefficient is that African-Americans are one percent more likely to participate than the omitted category, which in this case is non-white, non-African-American students. If,

alternatively, the analysis produces a negative 0.01 coefficient, the interpretation is just the opposite. For continuous variables, the coefficient represents the change in probability from an incremental change from the mean value. For prior test scores, the values are standardized with a mean of zero and a standard deviation of one. Therefore, if the coefficient is 0.01, the interpretation is that for every standard deviation above the mean, the probability of attending the program goes up by 1 percent and vice versa for a negative value.

The results for SES programs suggest that African-American and non-African-American, non-white students are no more or less likely to participate than white students. However, middle school students are 9 percent less likely to participate than elementary students, a finding that confirms our descriptive results as well as the remarks by parents and district officials who discussed drop-off in participation at the middle school level. Also, the analysis suggests that lower performing students are more likely to participate in the program, as intended.

Unlike the results for the SES program, African-American students are 8 percent more likely to participate in EAP than white students. Also, unlike the SES results, the analysis suggests that middle school students are no more or less likely to participate in EAP than elementary school students, but high school students are 20 percent less likely than elementary students to participate. Like the SES program, lower performing students are more likely to participate in EAP, as intended.

Exhibit 3.5 Participation Analysis for the 2005-06 School Year

Student Characteristic	SES Coefficient (Standard Error)	EAP Coefficient (Standard Error)
African-American	0.004 (0.04)	0.08** (0.02)
Non-black, non-white	-0.05 (-0.16)	-0.02 (0.03)
Student in middle school grade	-0.09** (0.03)	0.01 (0.03)
Student in high school grade	NA	-0.20** (0.03)
Prior reading z-score of student	-0.03** (0.01)	-0.04** (0.008)

**Indicates significance at the 5 percent level.
*Indicates significance at the 10 percent level.
NA indicates that no high school students were eligible for SES.

Exhibit 3.6 displays the results of EAP when including information on whether the school provides transportation and whether the school had sufficient staff to accommodate all students requesting to participate. First, we should note that the racial characteristics, grade level, and prior test scores have similar results as above, which suggests that controlling for transportation and staffing does not change the overall effect. Also, we did not find that staffing affected whether a student participates. However, whether the school provides transportation is marginally significant. The results suggest that providing transportation increases the probability of a student participating by 6 percent.

Exhibit 3.6 EAP Participation Analysis Including Survey Information for the 2005-06 School Year

School and Student Characteristic	Coefficient (Standard Error)
Lack of staff	-0.03 (0.05)
Transportation	0.06* (0.03)
African-American	0.07** (0.02)
Non-black, non-white	-0.01 (-0.35)
Student in middle school grade	0.001 (0.03)
Student in high school grade	-0.23** (0.03)
Prior reading z-score of student	-0.04** (-0.01)

**Indicates significance at the 5 percent level.
*Indicates significance at the 10 percent level.

Finally, in Exhibit 3.7, we present the results from the analysis of student attendance as measured by the number of days a student attended the EAP program. Lack of staff, provision of transportation, and rewards and incentives are not associated with greater attendance. However, whether a classroom teacher reminds students of their sessions is associated with greater attendance. In fact, it increases the number of days a student attends by nearly 17 days—a substantial amount given that the average amount of days attended is 21 days.

Consistent with the results for likelihood of participating, African-American students have higher attendance compared with white students—an average of 6.7 days. Students attending middle and high school grades, relative to students attending elementary school grades, have lower number of days attended by 11 and 13, respectively. The middle school result is particularly interesting given that middle school students had similar participation rates to elementary school students in the program in Exhibits 3.5 and 3.6.

Exhibit 3.7 Student Attendance Analysis Including Survey Information for the 2005-06 School Year

School and Student Characteristic	Coefficient (Standard Error)
Lack of staff	-2.46 (6.25)
Transportation	-0.98 (4.03)
Classroom teacher speaks to students about attending the tutoring sessions	16.71 (3.12)
Rewards or incentives for attendance	-6.39 (10.31)
Sending material home with students	-1.84 (3.33)
African-American	6.74** (2.39)
Non-black, non-white	0.80 (2.77)
Student in middle school grade	-11.04** (3.53)
Student in high school grade	-13.02** (3.41)
Prior reading z-score of student	-0.89 (0.79)

**Indicates significance at the 5 percent level.
*Indicates significance at the 10 percent level.

SUMMARY

In this chapter, we provided information about the level of participation in EAP and SES programs and factors associated with higher or lower levels of participation. Overall, our analysis suggests that less than 25 percent of the eligible population participates in SES and EAP programs.

However, participation varies by grade level of students. Relative to elementary students, middle school students are less likely to participate in SES(high school students were not eligible for SES),

while high school students are less likely than elementary and middle school students to participate in EAP. It is interesting to note that while middle school students were no more or less likely to participate in the EAP program than elementary students, they did attend the programs significantly fewer days.

Also, relative to white students, African-American students are no more or less likely to participate in the SES program, while they are more likely to participate in the EAP program and attend more often. For a district struggling to close the achievement gap between African-American and white students, this is good news. In addition, for both the SES and EAP programs, lower-achieving students are more likely to participate in these programs. Again, this is good news for a district that has a substantial number of lower achieving students.

In terms of the overall low participation rates, parents in our focus groups suggested that the lack of clarity in the information provided to them may affect participation. They were often confused about eligibility and whether the program was free. Parents also expressed concerns about discipline problems in these programs and reported that overall lack of monitoring and enforcement of attendance may be a deterrent to student participation. Finally, parents noted that as students get older, they have more competition for their time, including extracurricular activities and jobs, which will reduce participation.

In respect of improving participation, our analysis of the survey data suggest that providing transportation is marginally associated with higher participation rates, but not higher number of attended days. However, having teachers remind students to attend their tutoring sessions is strongly associated with higher attendance.

4. ACHIEVEMENT ANALYSIS

To estimate the effect of the SES and EAP programs, the counterfactual must be estimated. In other words, we must explore how students exposed to these programs would have performed in the absence of those options. Estimating an appropriate counterfactual is challenging, because participating students may be different in unobservable ways from non-participating students. Indeed, the mere fact that they have made a choice to participate suggests that differences are likely. An analysis of achievement while controlling only for demographic or other observable characteristics may produce biased estimates of program effects. It cannot be assumed that if the choices were not available, students using the choices provided would have had the same outcomes as those of students who did not choose.

The ideal way to control for unobserved differences between treatment and control groups is a randomized experiment with assignment to treatment or control by lottery. Random assignment through a lottery ensures that the treatment and control groups are similar in every way except in the use of the treatment itself (in this case, SES or EAP programs). Randomized experimental designs have been used to analyze the effects of school choice programs including vouchers (Howell et al., 2002; Peterson et al., 2003) and charter schools (Hoxby and Rockoff, 2004). In the context of these programs, however, a randomized design is impractical because these programs are designed to be available to all eligible students.

In the absence of an experimental option, the best alternatives are quasi-experimental designs, including a difference-in-differences approach. Researchers often use a difference-in-differences approach to control for selection bias (Bifulco and Ladd, 2006; Sass, 2006; Zimmer and Buddin, 2006; Hanushek et al., 2005; Booker et al., 2004; Zimmer et al., 2003; Wooldridge, 2003). The difference-in-differences approach uses within-subject pre/post comparisons and comparisons between students exposed and not exposed to the SES and EAP programs. In essence, this approach examines differences in achievement for (nonequivalent) treatment and comparison groups, over a period extending before and after treatment (i.e., before and after students enroll in SES or EAP). In econometric terms, this is referred to as a student fixed-effect approach.

ANALYTIC DETAILS

A total of 98 and 567 students participated in SES in the 2004-05 and 2005-06 school years while 1,665 and 5,939 students participated in EAP in the same years. Of these, 30 and 635 students participated in the SES and EAP programs both years, respectively. In total, the data include 665 student-year observations in SES and 7,604 student-year observations in EAP. In addition, 289 students participated in both SES and EAP across the two years. Our analysis examines the effects of students participating exclusively in SES or EAP and students participating both in SES and EAP in the same year.

As noted previously, outcome indicators for the achievement analyses are rank-based math and reading z-scores. The formal model to examine the impact of the programs on the outcomes is specified in equation 4.1.[14] To examine achievement effects, we use achievement gains ($A_{jt} - A_{jt-1}$) as the outcome measure to guard against differences in achievement trajectories prior to "treatment." Using gains allows the analysis to compare the student's achievement gains while participating in SES, EAP, or both with his/her achievement gains before participation in the programs. Examining gains accounts for the possibility that students with similar baseline achievement scores have different underlying achievement trajectories. The analysis also includes grade-year interactions to account for the possibility that achievement can vary across grades and over time.

$$A_{jt} - A_{jt-1} = \alpha EAP_{jt} + \beta SES_{jt} + \phi Both_{jt} + \lambda Elig_{jt} + \mu_j + \theta_{gt} + \nu_{jt} \qquad \textbf{(Equation 4.1)}$$

Where:

- $A_{jt} - A_{jt-1}$ is a measure of the achievement gain of the j^{th} student in the t^{th} year,
- EAP_{jt} is an indicator of whether student j participated exclusively in EAP in the t^{th} year,
- SES_{jt} is an indicator of whether student j participated exclusively in SES in the t^{th} year,
- $Both_{jt}$ is an indicator of whether student j participated in both EAP and SES in the t^{th} year

[14] The analysis incorporates the clustering of student achievement results within schools, thereby ensuring the estimation of robust standard errors.

- $Elig_{jt}$ is an indicator of whether the student j is eligible or not for the SES option in the t^{th} year,[15]
- μ_j captures individual student fixed effects,
- θ_{gt} captures grade-by-year fixed effects, and
- ν_{jt} is the random disturbance term.

This regression specification shows the relationship between choosing to participate in SES, EAP, or both, and student achievement. Because our analysis uses fixed-effect models and only examines characteristics that vary over time, demographic characteristics, such as race, drop out of the models. The basic model estimates coefficients for year-and-grade parameters and participation in SES, EAP, or both programs, plus a control for whether the student was offered the SES provision.

Modifications to the basic research model

While equation 4.1 gives us an overall estimate of the effects of participating in SES, EAP, or both options, we are also interested in the effects these programs have on students of different races. Because the achievement gap between African-American and white students is a major issue for PPS, we examine the effect for African-American students' participation in SES, EAP, or both programs relative to African-American students not participating in these programs (we also conduct a similar exercise for white students). In addition, we are also interested in knowing the effects of the programs over time and what features of the SES and EAP programs are associated with improved performance. To address these issues, we modified equation 4.1 to carry out these additional analyses.

First, we expand equation 4.1 to include an interaction term (R) to examine whether the achievement effects of participating in SES, EAP, or both vary across African-American and white students participating in these programs relative to African-American and white students who do not. The expanded model is displayed in equation 4.2:

$$A_{jt} - A_{jt-1} = \alpha EAP_{jt} + \delta EAP(R)_{jt} + \beta SES_{jt} + \varepsilon SES(R)_{jt} + \phi Both_{jt} + \varphi Both(R)_{jt} + \lambda Elig_{jt} + \mu_j + \theta_{gt} + \nu_{jt}$$

(Equation 4.2)

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[15] Because the EAP option is available to nearly all the district, we did not put a similar control for the EAP option.

Next, a variation of equation 4.1 is used to examine the effects of SES and EAP by time in treatment. Specifically, each treatment variable was decomposed into a first year and second year effect for students who have treatment for only one year or two years.[16]

The formal model is specified in equation 4.3 where YRone takes on the value of one when the student is in the first year of treatment (i.e., first year of participation in SES or EAP) and zero otherwise while Mult takes on the value of one when the student is the second year of treatment and zero otherwise. YRone and Mult are estimated separately for both the SES and EAP programs. While the model does not estimate the effect of students participating in both programs by year (again, because only one student participated in both programs in the 2004-05 school year), we do control for the fact that some students participated in both programs in the second year.

$$A_{jt} - A_{jt-1} = \alpha YRone_{jt} + BMultjt + \lambda Eligjt + \phi Both_{jt} + \mu_j + \theta_{gt} + \nu_{jt} \quad \textbf{(Equation 4.3)}$$

Third, we modify equation 4.1 to include a set of variables (OPER) that describes the operation of the SES and EAP programs to examine what factors, if any, are associated with improved student achievement. The operational information is derived from the survey data, which were collected only in the 2005-06 school year. Because we do not know how these programs operated in the 2004-05 school year, we do not include students who participated in the SES and EAP program for the 2004-05 school year into this analysis.

$$A_{jt} - A_{jt-1} = \alpha EAP_{jt} + \beta SES_{jt} + \phi Both_{jt} + \lambda Elig_{jt} + \tau OPERit + \mu_j + \theta_{gt} + \nu_{jt}$$

(Equation 4.4)

Finally, the above analysis assumes that all students who participate in these programs have the same level of exposure to treatment. Therefore, we also examine whether the number of days each student participated in EAP (we do not have attendance information for SES) affects student achievement. The analysis is specified in Equation 4.5 where EAPdays is the number of days a student attended EAP. We also include a squared term of the number of days to examine whether the effect of participation is non-linear (that is, does the effect of participation have the same effect for each day or does each day have a decreasing effect as the days increase).

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[16] Because there is only one student that used both programs for both years, we do not look at the effect of using both the SES and EAP programs over time.

$$A_{jt} - A_{jt-1} = \alpha EAPdays_{jt} + \beta EAPdays2_{jt} + \mu_j + \theta_{gt} + \nu_{jt} \qquad \textbf{(Equation 4.5)}$$

For the analysis, we use student achievement data from the 2000-01 through the 2005-06 school years where 64,273 student-years observations from 30,241 students contribute to the math estimate and 70,290 student-years observation from 32,030 students contribute to the reading estimate.

RESULTS

We first present the results of the basic model that examines the effect of participation in SES, EAP, or both in Exhibit 4.1. For math, the estimates suggest that participation in SES only, EAP only, or participation in both programs leads to student achievement gains, but with varying effect sizes. Participation in SES only or both leads to effect sizes of 0.26 and 0.35, which are large effect sizes relative to research in social science (Cohen, 1969). Participation in EAP only leads to a small effect of 0.07 of a standard deviation. For reading, the estimates suggest that participation in SES alone does not lead to achievement gains, but participation in EAP only or both programs can lead to achievement gains. Again, however, the effect size varies, with participation of EAP leading to a small student achievement gain of 0.06 of a standard deviation while participation in both leads to a relatively large achievement gain with an effect size of 0.20 of a standard deviation.

Exhibit 4.1 Estimation of Effects from Participation in SES, EAP, or Both

Program	MATH	READING
	Coefficient (Standard Errors)	Coefficient (Standard Errors)
SES ONLY	0.26** (0.07)	-0.03 (0.08)
EAP ONLY	0.07* (0.04)	0.06* (0.04)
BOTH	0.35** (0.12)	0.20* (0.11)

** Indicates significance at the 5 percent level.
* Indicates significance at the 10 percent level.

One concern for these estimates is whether they account for the possibility that students who perform poorly in one year are especially likely to participate in the program the following year. All tests have some level of noise in their measurement, and some students will score lower or higher on a single administration of a test than the average score they would receive if they took multiple, similar tests. Thus, a student could score poorly on a particular test in one year and then the next year score higher as they bounce back to a score more reflective of their learning. If students and their families base their participation decision (or are guided by teachers to participate in the program) partly on the students' prior year test scores, then some of the gains in the results in Exhibit 4.2 could be based on "bounce back" in their performance rather than an effect from participation.

For students for whom we can observe multiple achievement gains prior to participation, this is less of an issue because all previous test scores gains are compared to the gains the student experiences while participating in the program. For these students, we examined whether they experienced a dip in performance prior to participation, and found that they generally did not. However, for the students for whom we can only observe one achievement gain prior to participation, we do not know whether these students experienced a dip in performance. Therefore, we reran the analysis eliminating these students. For math, this eliminates 98 out of 376 SES only student year observations, 1,906 out of 7,135 EAP only student year observations, and 95 out of 289 student year observations for students participating in both programs (the numbers are similar for reading).

Exhibit 4.2 highlights the results of the analysis. The coefficient estimates are similar for math and reading, except for the results of participation in both programs in reading. Overall, these results do provide confidence in the results presented in Exhibit 4.1. However they do raise questions about the reliability of the reading results for students participating in both programs.

The question then becomes: do we trust the reading results for students participating in both programs in Exhibit 4.1, which may have a bias because of a pre-participation dip caused by noise, or do we trust Exhibit 4.2, which includes a much smaller sample of students and may not be representative of the whole population participating? Because there is no clear answer to this question, our general conclusion is that while we do see some evidence of reading achievement gains for students participating in both programs, we caution readers against making strong conclusions from these effects.

Exhibit 4.2 Estimation of Effects from Participation in SES, EAP, or Both using Only Students for Whom Multiple Prior Student Achievement Gains Are Available

Program	MATH	READING
	Coefficient (Standard Errors)	Coefficient (Standard Errors)
SES ONLY	0.26** (0.13)	-0.03 (0.09)
EAP ONLY	0.05 (0.04)	0.08** (0.04)
BOTH	0.28* (0.15)	0.07 (0.10)

** Indicates significance at the 5 percent level.
* Indicates significance at the 10 percent level.

Effects by Exposure

In math, and possibly in reading, students gain the most when they participate in both programs. It is unclear whether this is simply a result of increased exposure to tutoring or if these programs complement one another in ways that lead to better student performance for students who choose to participate in both programs.

We can gain some insights into whether increased exposure is associated with higher student achievement gains by examining the relationship between the number of days attending EAP and student achievement gains (we do not have similar attendance data for SES). If the effects are mainly derived from exposure, we would expect to see greater student achievement gains for students who attend the programs more frequently. Conceptually, we would not necessarily expect that the effects would be same across each day a student attends the program, therefore, as noted earlier, we include a squared term in the analysis to capture non-linear effects of attendance.

The results, which are displayed in Exhibit 4.3, suggest that there is not a relationship between increased number of days tutored in EAP and student achievement gains.[17] While this does not address the issue of exposure definitively, it does provide some evidence that the

[17] Because EAP attendance is included both as a non-squared term and a squared term, we test significance using a joint-F statistics, which suggests the effect from attendance was insignificant.

positive effect from attending both programs in math, or even reading, may not simply be that of increased exposure.

Exhibit 4.3 The Relationship between EAP Attendance and Achievement Gains

Program	MATH	READING
	Coefficient (Standard Errors)	Coefficient (Standard Errors)
EAP Attendance	0.004 (0.002)	0.003 (0.002)
EAP Attendance Squared	-0.00002 (0.00004)	-0.00002 (0.00002)

** Indicates significance at the 5 percent level.
* Indicates significance at the 10 percent level.

Effects by Race

Exhibit 4.4 presents the achievement gains associated with African-American and white students' participation in the SES, EAP, or both programs relative to the gains of African-American and white students who chose not to participate. The results for African-Americans mimic the overall effects presented in Exhibit 4.1 (largely because the vast majority of students in the three categories are African-American) with a positive math effect for African-American students participating in SES only, EAP only, and both programs. These effect sizes range from a relatively small effect size 0.07 of a standard deviation for African-American students participating in EAP only and a relatively large effect size of African-American students participating in SES only or both programs with 0.27 and 0.31 of a standard deviation respectively. The analysis also suggests a large student achievement gain in math for white students participating in both programs. For reading, only participation in both programs lead to a positive effect for African-American students with a relatively large effect size of 0.22.[18]

Focusing on math, as a point of reference to these effect sizes, the achievement gap between African-Americans and whites in Pittsburgh

[18] As a sensitivity analysis, we made the same restrictions in the data we employed in Exhibit 4.2 for the analysis and found very similar results, except for students participating in both in reading with an effect size of 0.07, which again raises caution in the reading results.

is currently 0.73. African-American students that participate in both programs had gains that represent over 40 percent of the achievement gap.

Exhibit 4.4 Examining Achievement Gains by Race

Program	MATH	READING
	Coefficient (Standard Errors)	Coefficient (Standard Errors)
African-American students that participate in SES only	0.27** (0.09)	0.01 (0.07)
African-American students that participate in EAP only	0.07* (0.04)	0.05 (0.04)
African-American students that participate in both programs	0.31** (0.15)	0.22** (0.12)
White students that participate in SES only	0.15 (0.14)	-0.44 (0.28)
White students that participate in EAP only	0.07 (0.06)	0.08 (0.06)
White students that participate in both programs	0.40** (0.17)	0.11 (0.15)

** Indicates significance at the 5 percent level.
* Indicates significance at the 10 percent level.

Achievement Gains by Year of Participation

A natural question is whether the effect varies by participation in these programs over multiple years. Unfortunately, only 18 students participated in both programs in the first year, which effectively precludes an analysis of the effect of participating in both programs in both years. In addition, only 30 students participated in the SES over the two years, which diminishes our ability to detect effects for SES over multiple years. In contrast, 625 students participated in the EAP for multiple years, which should be a sufficient sample to examine whether participation in EAP over multiple years has a differential effect. The results of participation for one year only and multiple years for both SES and EAP are displayed in Exhibit 4.5.

The achievement gain estimates for participation for one year only reflect the overall estimates in Exhibit 4.1, which is not surprising given that well over 90 percent of students who have participated in the programs have only participated for one year. Also, as we suspected, while the model estimates a large effect size for students who participated for multiple years in SES, there is not a sufficient number of students to detect a statistically significant effect.[19]

Exhibit 4.5 Achievement Gains by Year of Participation

Program	MATH	READING
	Coefficient (Standard Errors)	Coefficient (Standard Errors)
Participation in SES for one year only	0.26** (0.09)	-0.03 (0.07)
Participation in SES for two years	0.25 (0.30)	0.00 (0.19)
Participation in EAP for one year only	0.07** (0.036)	0.06* (0.03)
Participation in EAP for two years	-0.02 (0.11)	0.10 (0.07)
Participation in both programs for one year only	0.33** (0.12)	0.19* (0.11)

** Indicates significance at the 5 percent level.
* Indicates significance at the 10 percent level.

Inside the black box

Often, research evaluations stop with an overall assessment of the programs without examining what programmatic features are associated with differential achievement effects. Because we have survey data that provide at least some insights into the operational features of the programs, we examine whether variations in these features are associated with higher student achievement gains. Obviously, a thorough evaluation of this association would include observational data and the ability to

[19] Using the restricted sample employed in Exhibit 4.2, the effect sizes of statistically significant results of participation in SES and EAP across the years are similar.

link variations in operations not only across programs and schools, but also within programs and schools. Unfortunately, our data are measured at the organization and school level. Nevertheless, they do provide some initial insights that could be building blocks for future research.

Because the survey questionnaires contain literally hundreds of different items, it does not make sense to include all of these questions in the analysis. Having hundreds of items in the model could lead to some items being significant just by chance. Also, some questions focused on background information or probed into practices of increasing student participation, which are less relevant to an achievement analysis. Therefore, the analysis includes only questions that focused on the operational practices of the program that could theoretically affect student achievement have been associated with student achievement in other context.

Exhibit 4.6 displays the set of questions we considered for inclusion. However, many of the questions lacked sufficient variation in responses to lead to any possible effect and were excluded from the analysis. We use only the variables in italics for analysis. Also, many of these questions were only asked in the EAP survey and therefore, a variable was included for only EAP students. Other questions were asked on both the SES and EAP survey, but we included separate variables for SES and EAP students to allow the possibility that the implementation of the feature was slightly different across programs.

Exhibit 4.6 Operational Features included in Achievement Analysis

Operational Feature	Description	For which program(s) the data were collected (via surveys)
Classroom teachers as tutors	*Percentage of tutoring staff providing services to students they also teach as part of their regular teaching assignment*	EAP only
Certified teachers	*Percentage of tutoring staff that are certified teachers*	EAP only
Tutoring experience	*Percentage of staff that has four or more years of tutoring experience*	EAP only
Gaps	*Tutoring services are intended to fill in gaps in content from previous academic year or years*	EAP only
Aligned	Tutoring services are aligned with ongoing classroom content	EAP only
Test-specific skills	Tutoring services are intended to address test-specific skills and content	EAP only
Small groups	*Students are often or always tutored in groups of 5 or more students*	Both SES and EAP
Grouped by skill level	*Students are often or always tutored by skill level*	Both SES and EAP
Practice tests	Students are assessed using practice tests for state assessment at least a few times per month	Both SES and EAP
Assignments	*Students are assessed every session using assignments completed by students during tutoring sessions*	Both SES and EAP
Student portfolios	Students are assessed every session using student portfolios	Both SES and EAP

Exhibit 4.7 presents the results of the analysis. Most of the operational features are not associated with higher achievement gains. However, we do find positive effects in a couple of cases. Most notably, SES grouping of students by skill level has a large and statistically significant effect in both math and reading. Grouping of students by skill level is also positive for EAP schools, but not quite significant. This may suggest that there are differences between SES organizations and EAP schools when they group students by skill level. The other factor that is large and statistically significant is having the tutoring instruction designed to address gaps in learning for students from previous academic years. This is significant in reading only. Finally, higher percentages of staff with four or more years of tutoring experience are associated with higher achievement gains in math. However, the magnitude is small, with an effect size of 0.003. The interpretation of this effect is that for every 1 percent increase in tutors with four or more years of experience, the achievement gains are expected to go up by 0.003 of a standard deviation. Even if a program could increase the percentage of staff with this level of experience by 10 percent, it could only expect 0.03 of a standard deviation gain in achievement.

Surprisingly, other features– such as tutors being certified teachers or classroom teachers– are not associated with higher achievement gains in either math or reading. We should also note that by no means is this an exhaustive list of operational features, and there are likely programmatic features that are quite important to the achievement gains of students that were not captured by this analysis.

Exhibit 4.7 Association between Operational Features and Student Achievement Gains

Program	MATH	READING
	Coefficient (Standard Errors)	Coefficient (Standard Errors)
Classroom teachers as tutors	-0.0001 (0.001)	0.003 (0.001)
Certified teachers	-0.002 (0.002)	-0.001 (0.002)
Tutoring experience	0.003** (0.001)	-0.0001 (0.01)
Gaps	0.03 (0.09)	0.17* (0.09)
Practice Test	-0.12 (0.10)	0.04 (0.09)
EAP use of assignments	0.01 (0.11)	0.01 (0.09)
SES use of assignments	-0.09 (0.10)	-0.04 (0.17)
EAP grouping of students by skill level	0.16 (0.11)	0.06 (0.09)
SES grouping of students by skill level	0.47** (0.21)	0.31* (0.18)
EAP tutor of students in small groups	0.06 (0.08)	0.07 (0.07)
SES tutor of students in small groups	-0.10 (0.19)	-0.21 (0.25)

** Indicates significance at 5 percent level
* Indicates significance at the 10 percent level.

SUMMARY

In this chapter, we examined the relationship between participation in the SES, EAP, or both programs and gains in student achievement. Overall, the analysis provides strong evidence that achievement gains

are largest in math (and more limited evidence in reading) when students participate in both the SES and EAP programs.

Unfortunately, we do not know why this may be. One explanation could be that students are getting greater exposure to tutoring, which leads to greater student achievement gains. We tried to examine this indirectly by examining whether additional days of attendance in the EAP program are associated with greater student achievement gains, but we were unable to detect an effect (we did not do a similar exercise for the SES students because we do not have similar data). Another possible explanation is that these programs somehow complement one another, but this could only be determined with further research.

In addition, our analysis suggests that students who participate only in the SES program experience higher student achievement gains in math, but not in reading. Also, across the two years of EAP implementation, we found only small achievement gains for students participating in EAP only.

Finally, exploration within the "black box" of program operation did not identify many features of the programs associated with higher student achievement gains. However, the analysis does suggest that SES grouping of students by skill level is associated with higher achievement gains in both math and reading. In addition, the analysis suggests that higher achievement gains in reading are associated with EAP schools that design their tutoring instruction to address gaps in learning from previous academic years.

5. SUMMARY AND CONCLUSIONS

In recent years, both state and federal governments have taken an increasingly large role in out-of-school services. State-funded programs like EAP provide learning opportunities for students by funding tutoring, and federal NCLB programs provide supplemental services (SES) to low-income students attending schools that miss school-wide academic targets. Both programs have been operating in Pittsburgh since the 2004-05 school year, and they represent a significant change in the landscape of out-of-school opportunities for students.

In this evaluation, we examine the effectiveness of both programs by collecting data through parent focus groups, surveys of SES organizations and EAP schools, and test scores of and demographic information on individual students. Together, the data suggest that there is some level of parental dissatisfaction with the degree of outreach about these programs, but not necessarily dissatisfaction with the programs in general. In addition, our survey data show different emphases in the provision of services by SES organizations and EAP schools. SES organizations place greater emphasis on smaller group settings for tutoring and group students by skill level, while EAP schools place greater emphasis on staffing programs with tutors who have classroom experience.

The data also suggest that fewer than a quarter of all students eligible for these programs take advantage of them. Parents indicated that lack of clarity in communication about these programs may adversely affect participation, because they were confused about the eligibility criteria and about whether the programs were free. In addition, the parents noted that as students get older, more activities (i.e., extracurricular activities and jobs) compete for their time. This was confirmed by examining individual student participation patterns across grade levels.

The analysis also suggests that lower performing students were more likely to use these programs and that African-American students were at least as likely as whites to use the SES program and more likely than whites to use the EAP program. This can be considered good news for a district struggling to increase the performance of its lower-performing and African-American students. In addition, the analysis suggests that providing transportation may help participation.

In terms of student achievement, our analysis suggests that students who participate in both SES and EAP experienced achievement

gains in math of 0.35 of a standard deviation—a substantial gain compared to other education reforms. In addition, we found some evidence that students participating in both programs could experience achievement gains in reading as well, but these results were more tenuous. Also, we found that students that participate in SES only experience a large student achievement gain in math, but no effect in reading and we found that students that participate in EAP only experience small gains in both math and reading. Furthermore, the analysis suggests an achievement gain for African-American students participating in both programs that is equivalent to 40 percent of the district's overall achievement gap in math between African American and white students. In examining the operational features of these programs, SES organizations' grouping of students by skill level for tutoring is associated with the largest achievement gains. One final note of interest is that we find stronger evidence of effects in math than in reading across the different programs, which may indicate differences in the quality of tutoring across the subjects or differences in the ease or difficulty in raising achievement across the subjects.

These results provide some insights into how to improve these programs. Most notably, the district might consider enhancing outreach to families and improving the clarity of the information provided. The district could expand access to transportation for these programs and have teachers remind students to attend their sessions. In addition, the district could examine more closely how SES providers are grouping students by skill level, because this is strongly associated with improved student achievement gains. Also, while there needs to be a further examination of how participation in both programs leads to large student achievement gains, there seems to be evidence that the district should consider encouraging students to participate in both programs, at least in math. Finally, the district could also consider follow-up research that takes a more in-depth look at the actual instruction of the tutoring programs to gain a better sense of successful instructional strategies.

REFERENCES

Bifulco, R. and H. Ladd. (2006). "The Impact of Charter Schools on Student Achievement: Evidence from North Carolina." *Education Finance Policy.*

Bodilly, S. and M. Beckett. (2005). *Making Out-of-School Time Matter: Evidence for an Action Agenda.* Santa Monica, CA: RAND.

Booker, K., S. Gilpatric, T. J. Gronberg, and D. W. Jansen, (2004). *Charter School Performance in Texas.* Private Enterprise Research Center Working Paper, Texas A&M University.

Cohen, Jacob, *Statistical Power Analysis for the Behavioral Sciences*, New York: Academic Press, 1969.

Fashola, O. S. (1998). *Review of Extended-Day and After-School Programs and Their Effectiveness,* Baltimore, Md.: Center for Research on the Education of Students Placed at Risk.

Gill, Brian, L. Hamilton, JR Lockwood, J. Marsh, R. Zimmer, D. Hill, and S. Pribesh (2005). *Inspiration, Perspiration, and Time: Operations and Achievement in Edison Schools.* Santa Monica, CA: RAND (MG-351-EDU).

Grossman, J. B., et al. (2002). *Multiple Choices after School: Findings from the Extended-Service Schools Initiative,* Philadelphia: Public/Private Ventures.

Hanushek, E. A., J. F. Kain, S. G. Rivkin, and G.F. Branch. (2005). *Charter School Quality and Parental Decision Making with School Choice.* NBER Working Paper: 11252.

Hollister, R., (2003). *The Growth in After-School Programs and Their Impact,* Washington, D.C.: Brookings Roundtable on Children.

Howell, W., Wolf, P., Campbell, D., & Peterson, P. (2002). "School vouchers and academic performance: Results from three randomized field trials." *Journal of Policy Analysis and Management,* 21(2), 191-218

Hoxby, C.M., and J.E. Rockoff. (2004). *The impact of charter schools on student achievement,* Working paper, Harvard University, 2004.

Kane, T. (2004). *The Impact of After-School Programs: Interpreting the Results of Four Recent Evaluations,* New York: William T. Grant Foundation.

Lauer, P. A., Motoko Akiba, Stephanie Wilkerson, Helen Apthorp, David Snow, and Mya Martin-Glenn. (2003). *The Effectiveness of Out-of-*

School-Time Strategies in Assisting Low-Achieving Students in Reading and Mathematics: A Research Synthesis, Aurora, Colo.: MCREL.

Miller, B. M. (2003). *Critical Hours: Afterschool Programs and Educational Success,* Quincy, Mass.: Nellie Mae Education Foundation.

Peterson, P. E., Howell, W. G., Wolf, P. J., & Campbell, D. E. (2003). *School vouchers: Results from randomized experiments* (pp. 107-144). In C. M. Hoxby (Ed.), The economics of school choice. Chicago: University of Chicago Press.

Raley, R., Grossman, J., and Walker, K.E. (2005). *Getting It Right: Strategies for After-School Success.* Philadelphia, PA: Public/Private Ventures.

Roth, J., J. Brooks-Gunn, L. Murray, and W. Foster. (1998). "Promoting Healthy Adolescents: Synthesis of Youth Development Program Evaluations,: Journal of Research on Adolescence. Vol. 8: 423-459.

Sass, T.R. (2006). "Charter Schools and Student Achievement in Florida." *Education Finance Policy*.

Seppanen, P. S., J. Love, D. deVries, L. Bernstein, M. Seligson, F. Marx, and E. Kisker. (1993). *National Study of Before- and After-School Programs,* Washington, D.C.: U.S. Department of Education.

Scott-Little, C., M. S. Hamann, and S. G. Jurs. (2002). "Evaluations of After-School Programs: A Meta-evaluation of Methodologies and Narrative Synthesis of Findings," *American Journal of Evaluation,* Vol. 23, No. 4, pp. 387–419.

Stullich, Stephanie, Elizabeth Eisner, Joseph McCrary, and Collette Roney (2006). *National Assessment of Title I Interim Report to Congress: Volume I: Implementation of Title I.* Washington, DC: U.S. Department of Education, Institute of Education Sciences.

U.S. Department of Education, Office of the Under Secretary. (2003). *When Schools Stay Open Late: The National Evaluation of the 21st Century Community Learning Centers Program: First Year Findings,* Washington, D.C.: U.S. Government Printing Office.

Wooldridge, J.M. (2003). *Introduction to econometrics* (2nd edition). South-Western: Mason, OH.

Zimmer, R, R. Buddin, D. Chau, G. Daley, B. Gill, C. Guarino, L. Hamilton, C. Krop, D. McCaffrey, M. Sandler, D. Brewer (2003). *Charter School Operations and Performance: Evidence from California.* Santa Monica, CA: RAND.

Zimmer, R.W. and R. Buddin (2006). *Charter School Performance in Two Large Urban Districts.* Journal of Urban Economics.