Rising Kindergarten and 1st-Grade Summer School Program for English Language Learners Evaluation, Summer 2009

Each summer, Austin Independent School District (AISD) provides a 4-week summer school enrichment program that is open to all rising kindergarten and 1st-grade English language learners (ELLs) who are enrolled in the Bilingual Education (BE) or English as a Second Language (ESL) programs. The primary goal of the program is to prevent the loss of academic skills that often occurs among economically disadvantaged students over the summer break (Terzian, Moore, & Hamilton, 2009). In the summer of 2009, 1,645 rising kindergarten students and 1,712 rising 1st-grade students attended the program across 10 elementary campuses (see Appendix A). This evaluation report addresses the following questions:

1. Which rising kindergarten and rising 1st-grade ELL students were most likely to attend summer school?
2. Which students were most likely to attend at least 3 weeks (11 or more days) of the 4-week (20-day) program?
3. How did the first 9-week academic performance of kindergarten and 1st-grade students who attended summer school compare with that of ELL students who did not attend summer school?
4. How was the program funded, and what was the cost per student?

Key Findings

Enrollment and Initial Attendance

- Across the two groups, approximately 73% of eligible students enrolled in the program, but only 57% of those students attended summer school for at least 1 day; 48% of eligible students attended 11 or more days of the 20-day program (Figure 1, page 3).

- Campus location is a significant predictor of initial summer school attendance. Rising kindergarten and 1st-grade students for whom the summer school program was held at their home school were 52% and 75%, respectively, more likely to attend than were students who commuted from another neighborhood (page 5).

- Although BE Spanish-speaking students made up the majority of summer school students, ESL Spanish-speaking students and BE non-Spanish-speaking (e.g., Vietnamese) students had a higher likelihood of attending summer school than did BE Spanish-speakers (Figure 3, page 5).

Continued Attendance

- Among ELL rising kindergarten students, those whose summer school campus also was their home school attended more weeks of summer school than did those who commuted from another neighborhood (Figure 4, page 7).

- Among rising 1st-grade students, female and Spanish-speaking students were likely to attend more weeks of summer school than were males and non-Spanish-speaking students (Figure 4, page 7).

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Fall 2009 Academic Outcomes

- BE kindergarten students who attended summer school for at least 2 weeks demonstrated higher first 9-week grades in reading, mathematics, and writing than did BE students who did not attend summer school (Figure 5, page 8).

- ESL kindergarten students who attended summer school for at least 2 weeks demonstrated higher first 9-week grades in reading and writing than did ESL students who did not attend summer school (Figure 6, page 9).

- ESL 1st-grade students who attended summer school for at least 2 weeks demonstrated higher first 9-week grades in reading and mathematics than did ESL students who did not attend summer school; however, this pattern was not found among BE 1st-grade students (Figures 7 & 8, page 10 & 11).

- First-grade students who attended summer school were more likely to maintain their reading level than were those who did not attend, which suggests that the summer program had the intended effect of preventing academic skill loss (Figure 9 & Table 2, pages 12 & 13). It was not possible to examine summer skill loss among kindergarteners because summer school pre- and post- assessments were not recorded electronically.

Recommendations and Next Steps

- BE/ESL program managers should continue to staff summer school based on the fewer than 60% of eligible students who attend the program, rather than based on the number of students who initially enroll (Figure 1).

- Because students are more likely to attend summer school and attend more weeks of summer school if it is held at their home campus location than if it is held elsewhere, BE/ESL staff should consider opening additional summer school sites as one means of expanding program impact.

- There were several statistically significant academic differences between students who attended summer school and those who did not; however, the students' scores on the assessments that were most closely tied to the summer school curriculum were not recorded electronically and therefore were not available for analysis. It is strongly recommended that students' scores on the Bilingual Summer School Report Card pre- and post tests should be electronically recorded both to facilitate program evaluation and to increase teachers' access to these test results via the Austin Instructional Management System (AIMS).

- The average cost per student for the 2009 BE/ESL summer school program was $ 492.47. The authors of this report cannot make any definitive recommendations regarding the cost-effectiveness of BE/ESL summer school at this time; however, Department of Program Evaluation staff currently are refining their procedures for conducing cost effectiveness analyses and will include these estimations in future reports.

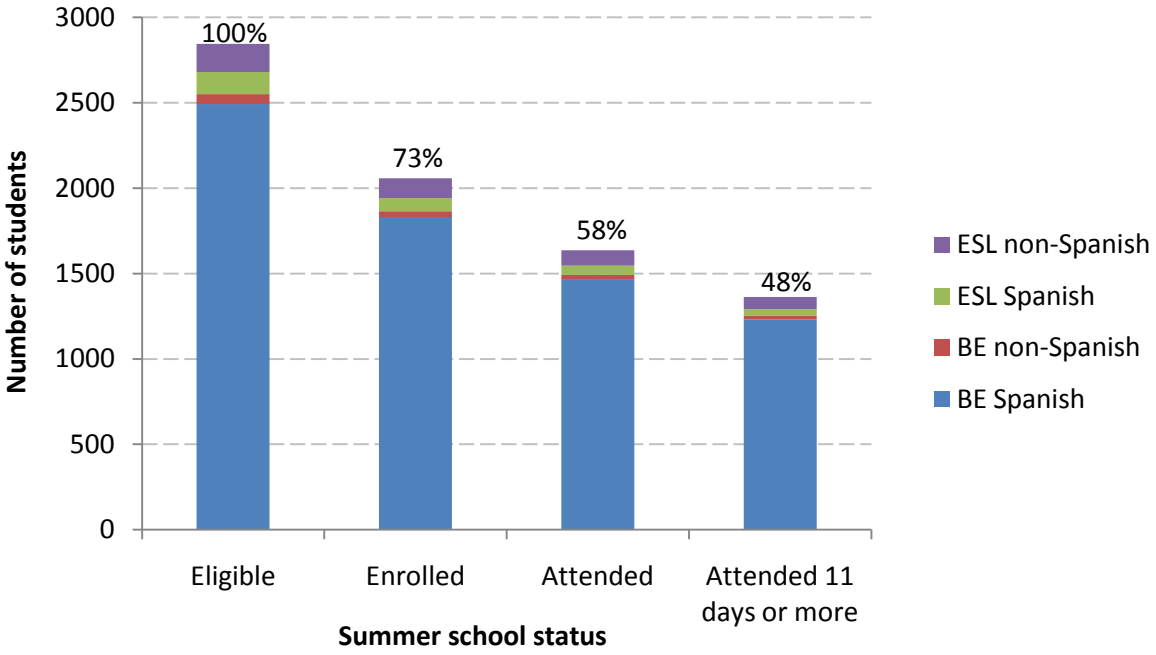
Summer School Enrollment and Initial Attendance

All rising kindergarten and 1st-grade ELL students who were enrolled in BE or ESL programs were eligible to participate in the AISD summer school program.

Overall Rates

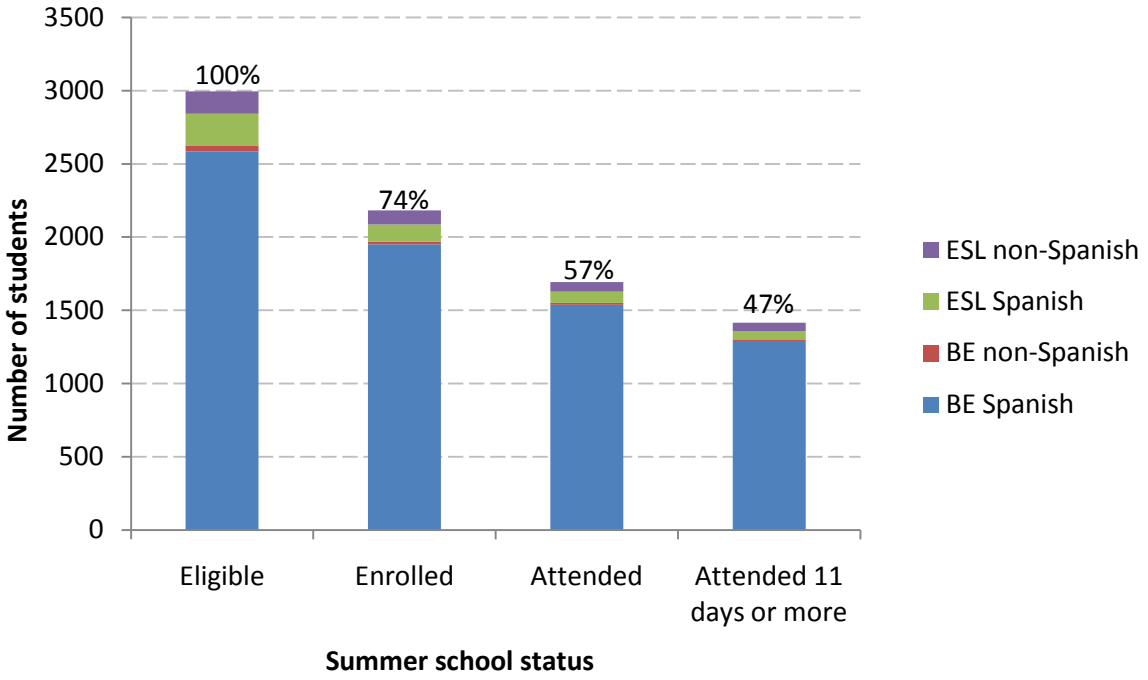
Of those eligible, 1,642 (58%) of rising kindergarten students and 1,704 (57%) of rising 1st-grade students attended at least 1 day of the 2009 summer school program. Trends in total enrollment and attendance were similar across the two grade levels (Figures 1 and 2). Appendix A1 summarizes enrollment and attendance by campus; appendices A2 and A3 summarize student demographic characteristics (see technical note in Appendix C-1).

Figure 1. Rising Kindergarten English as a Second Language (ESL) Students Who Enrolled in and Attended Summer School, 2009



Source. AISD student records
Note. The percentages of the total number of eligible students are presented above the vertical bars.

Figure 2. Rising 1st-Grade English Language Learner (ELL) Students Who Enrolled in and Attended Summer School, 2009



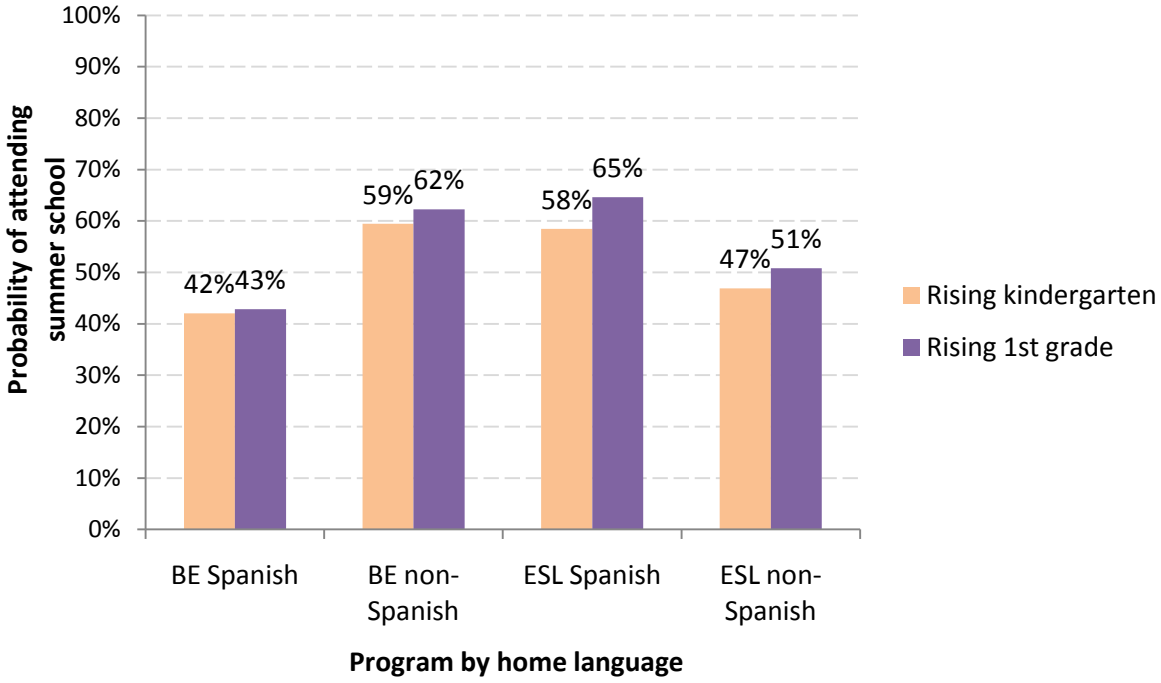
Source. AISD student records
Note. The percentages of the total number of eligible students are presented above the vertical bars.

Probability of Attending Summer School

Although Spanish-speaking BE students comprised the majority of summer school attendees (90% for rising kindergarten and 91% for rising 1st-grade students), other student groups were more likely to attend summer school than would be expected based on their percentage among the population of rising kindergarten and 1st-grade ELLs (see technical notes in Appendix C-2 to C-5).

As shown in Figure 3, the students most likely to attend summer school were rising 1st-grade Spanish-speaking ESL students (65% probability of attending) and BE non-Spanish-speaking students (62% likelihood of attending). Spanish-speaking BE students were least likely to attend summer school (42% of rising kindergarten students and 43% of rising 1st-graders).

Figure 3. Predicted Probabilities for Summer School Attendance, by Grade Level, 2009



Source. AISD student records
Note. Vertical bars indicate the likelihood of eligible students attending summer school. Estimates controlled for gender, economic disadvantage, and whether the students' summer school campus differed from the home campus. See technical note C-3 for more details.

To better understand which additional factors were significantly associated with attending summer school, Department of Program Evaluation (DPE) staff investigated the predicted probabilities associated with different student characteristics that that included student home language (Spanish/non-Spanish), program placement (BE/ESL), gender, economic disadvantage, and whether a student's home campus was that student's summer school campus. Results indicated that among both rising kindergarten and 1st-grade students, male and female students were equally likely to attend the summer school program. Among rising kindergarten students, those who were economically disadvantaged and those who were not economically disadvantaged were equally likely to attend summer school. However, among rising 1st-graders, students who were eligible for free or reduced lunch were 65% more likely to attend summer school than were students who were not eligible for free or reduced lunch.

Important program implications may be drawn with regard to students' home campus being the same or different from their summer school campus. Among rising kindergarten students, those whose summer school campus was the same as their home school were 52% more likely to attend summer school than were students originating from other campuses. Among rising 1st graders, students whose home school was the same as the summer school campus were 75% more likely to attend summer school than were students from other campuses. These results suggest that families would be more likely to take advantage of a summer school located close to home.

Continued Attendance

Among both rising kindergarten and 1st-grade students, the majority attended 3 or 4 weeks (16 to 20 days) of summer school; however, 16% to 17% of students attended only 1 or 2 weeks (1 to 10 days) of the program (Table 1). DPE staff investigated which student characteristics were associated with a greater likelihood of attending more weeks of summer school (see technical note C-7 for more information).

Table 1. English Language Learner (ELL) Students Attending Summer School, by Number of Weeks Attended, 2009

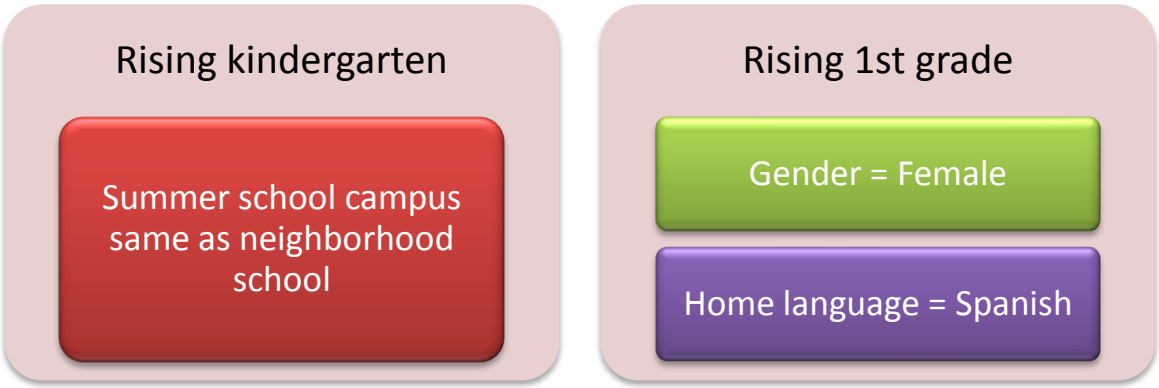
	Rising kindergarten		Rising 1st grade	
	Number	Percentage	Number	Percentage
1 week (1–5 days)	166	10%	168	9%
2 weeks (6–10 days)	114	7%	120	7%
3 weeks (11–15 days)	372	23%	413	24%
4 weeks (16–20 days)	990	60%	1003	59%
TOTAL	**1642**	**100%**	**1704**	**100%**

Source. AISD student records

Among rising kindergarten ELL students, attending a summer school campus that was the same as their home school significantly increased the likelihood of attending more weeks of summer school, compared with students commuting from another campus (Figure 4). Student gender, economic disadvantage, home language (Spanish or non-Spanish), and program (BE or ESL) were not significantly associated with attending additional weeks of summer school.

Among rising 1st-grade ELL students, gender and home language significantly contributed to additional weeks of summer school attendance. Female rising 1st-grade students were more likely to attend summer school for more weeks than were males, and Spanish-speaking students were more likely to attend more weeks than were non-Spanish-speaking students (Figure 4). Student gender, economic disadvantage, program (BE or ESL), and home campus location were not significantly associated with attending additional weeks of summer school.

Figure 4. Factors Associated With English Language Learners Attending Summer School for a Greater Number of Weeks



Source. AISD student records.
Note. Significant factors were identified using ordered logistic regression; see technical note B-10.

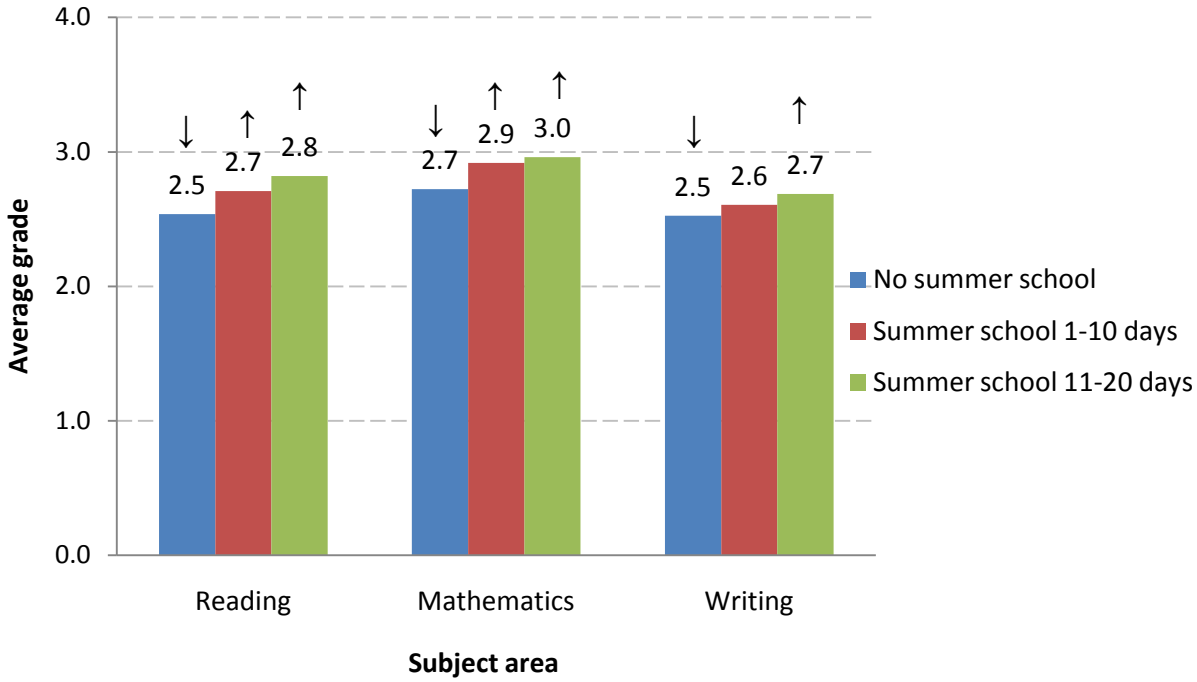
Academic Outcomes

To test the effect of participation in the summer school program on first 9-week academic performance and on whether the program was able to prevent the academic skill loss that often occurs in economically disadvantaged students, 1,551 kindergarten students and 1,569 1st-grade students who attended summer school were compared with their ELL grade-level peers who were enrolled in Fall 2009, but who had not attended summer school. A total of 3,009 ELL kindergarten students and 3,026 ELL 1st-grade students were included in the following analyses (see technical note C-7).

Kindergarten Students

No common assessments were available electronically to compare student performance at the end of pre-K and the beginning of kindergarten, which limited the models that could be performed to test the effects of summer school attendance. However, DPE staff compared the first 9-week grades of BE and ESL kindergartners who attended summer school for 1 to 10 days or 11 to 20 days with the grades of grade-level peers who did not attend summer school (see technical notes C-8 and C-9 for analytical details).

Figure 5. Average First 9-Week Grades for Kindergarten Bilingual Education Students, Fall 2009

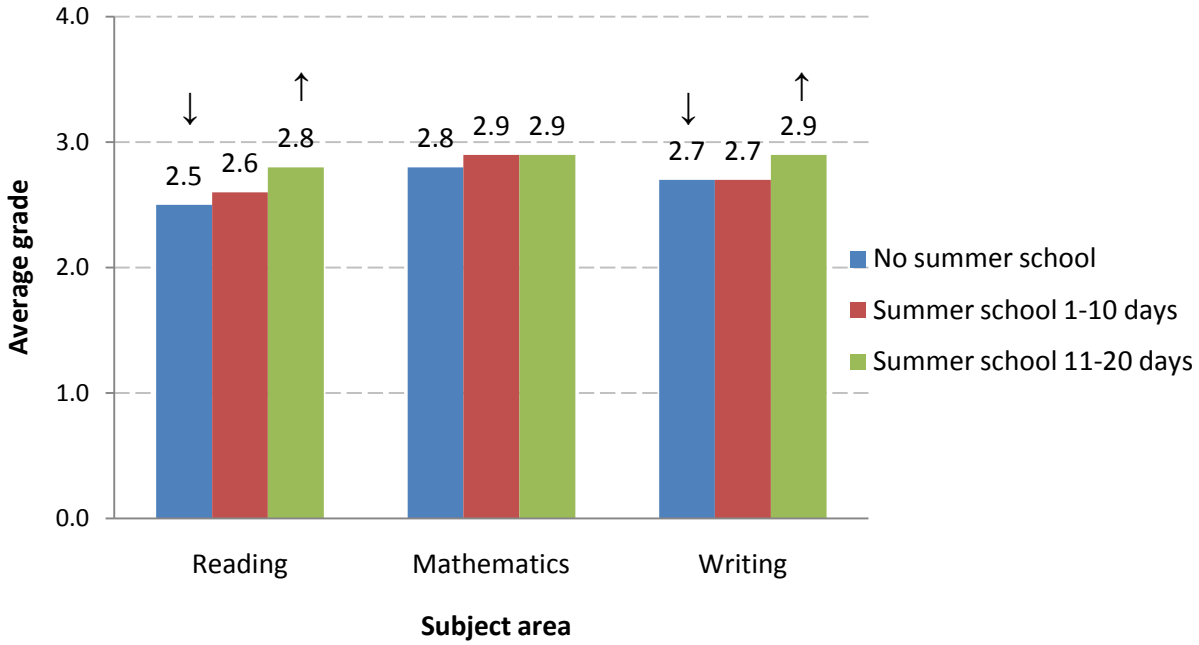


Source. AISD student records

Note. Arrows indicate statistically significant differences at the $p < .05$ level. Grades indicate the following levels of achievement: 1 (needs improvement), 2 (basic understanding), 3 (skilled), and 4 (advanced).

On average, BE kindergarten students who attended summer school for 1 to 10 days demonstrated significantly higher grades in reading and mathematics than did BE kindergarten students who did not attend summer school. Students who attended 11 to 20 days of summer school performed better in reading, mathematics, and writing than did BE students who did not attend summer school (Figure 5).

Figure 6. Average First 9-Week Grades for Kindergarten English as a Second Language Students, Fall 2009



Source. AISD student records
Note. Arrows indicate statistically significant differences at the $p < .05$ level. Grades indicate the following levels of achievement: 1 (needs improvement), 2 (basic understanding), 3 (skilled), and 4 (advanced).

On average, ESL kindergarten students who attended summer school 11 to 20 days performed better in reading and writing than did ESL students who did not attend summer school. The mean differences for ESL students who attended summer school were not statistically significant (Figure 6).

The average first 9-week grades for BE and ESL kindergarten students suggest the summer school program was effective at enriching students' academic skills, particularly in reading and writing, and that attending summer school for 11 to 20 days was more beneficial than attending for fewer days; however, 9-week grades are global ratings of students' skills in the subject area. Future analyses would be greatly enriched through the use of a standard assessment that is common across the end of pre-K and the beginning of kindergarten or one that objectively evaluates the skills taught during summer school.

First-Grade Students

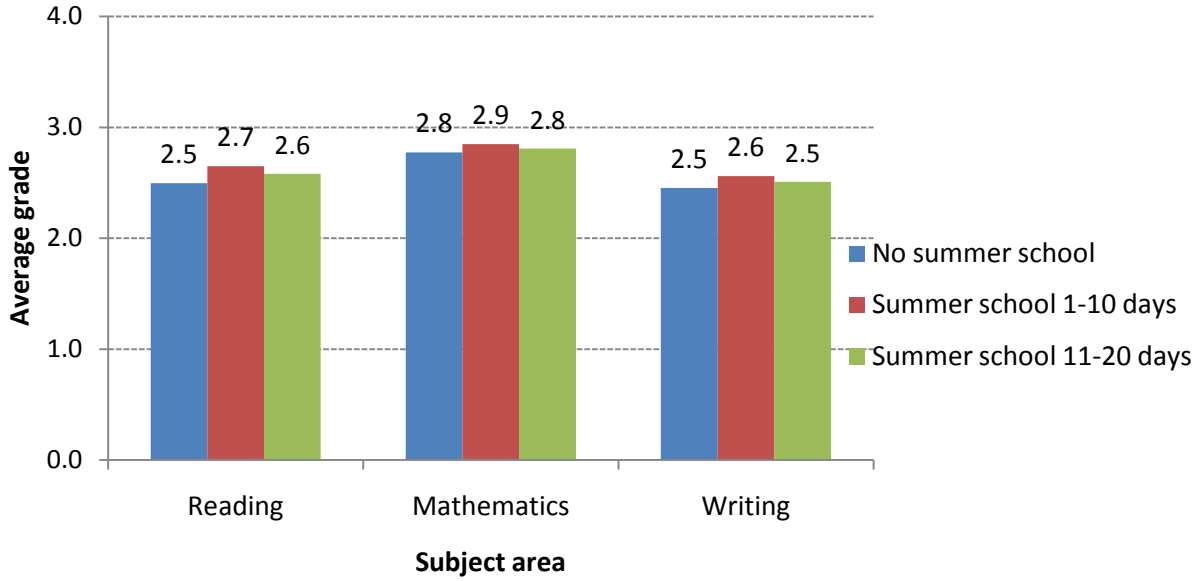
As did kindergarten ELLs, both BE and ESL 1st-grade students had first 9-week grades available for analysis of the association between summer school attendance and fall semester academic achievement.

DPE staff also used the Evaluación del Desarrollo de la Lectura (EDL) to examine whether summer school attendance enriched Spanish-speaking BE students' literacy skills, prevented academic losses over the summer, or both. An English version of this assessment, the Developmental Reading Assessment (DRA)

was available; however, insufficient numbers of ESL students were tested at both the end of kindergarten and the beginning of 1st grade to allow for meaningful analyses (see technical note in Appendix C-10.)

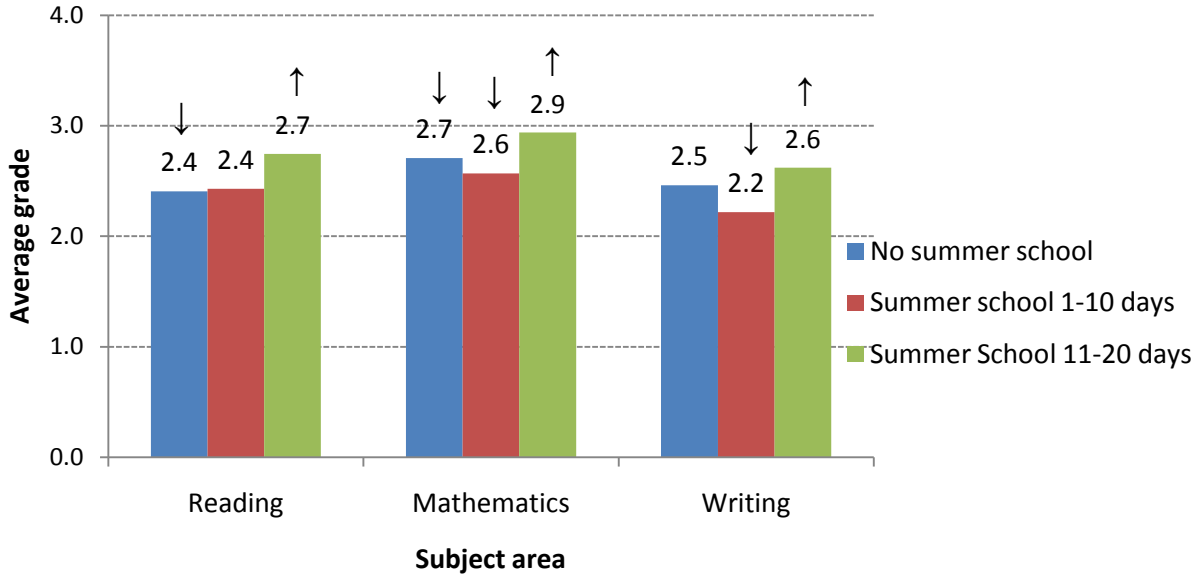
Subject area grades. Spanish-speaking 1st-grade BE students who attended summer school 1 to 10 days or 11 to 20 days were compared with those who did not attend summer school with respect to their first 9-week grades. As shown in Figure 7, no significant differences were found in average grades for 1st-grade BE students, based on summer school attendance.

Figure 7. Average First 9-Week Grades for 1st-Grade Bilingual Education Students, Fall 2009



Source. AISD student records
Note. Arrows indicate statistically significant differences at the $p < .05$ level. Grades indicate the following levels of achievement: 1 (needs improvement), 2 (basic understanding), 3 (skilled), and 4 (advanced).

Figure 8. Average First 9-Week Grades for 1st-Grade English as a Second Language Students, Fall 2009



Source. AISD student records
Note. Arrows indicate statistically significant differences at the $p < .05$ level. Grades indicate the following levels of achievement: 1 (needs improvement), 2 (basic understanding), 3 (skilled), and 4 (advanced).

As shown in Figure 8, 1st-grade ESL students who attended summer school for 11 to 20 days had higher grades in reading and mathematics than did students who did not attend summer school. ESL students who attended summer school for 11 to 20 days also demonstrated significantly higher grades in mathematics and writing than did students who attended summer school 1 to 10 days.

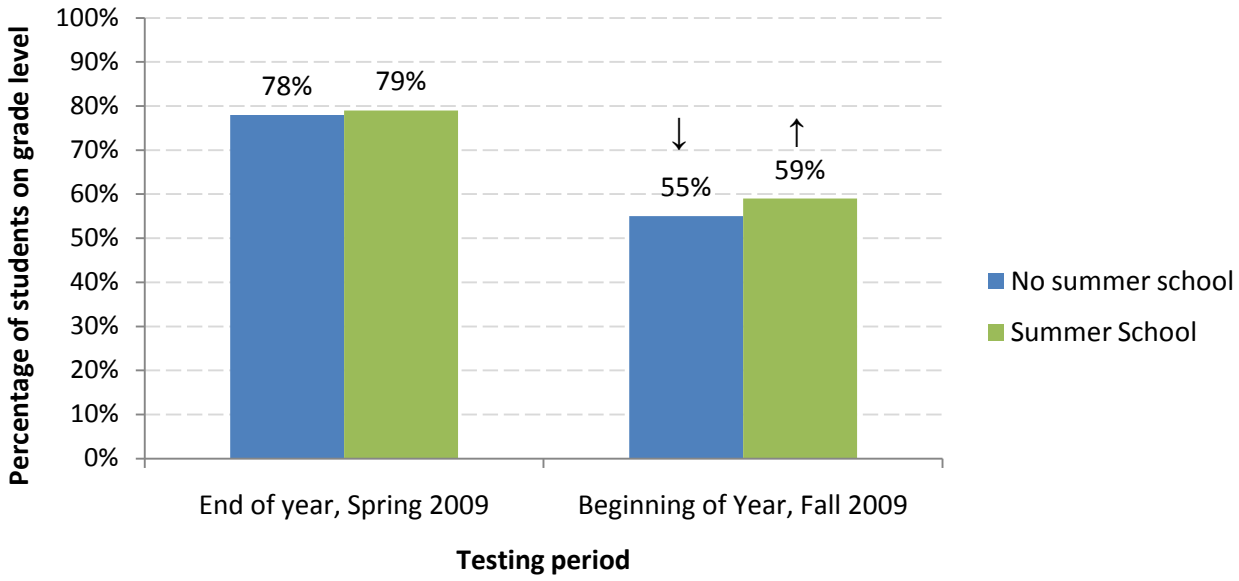
It is not clear why the 1st-grade ESL students who attended summer school earned significantly higher grades than did their ESL peers, while the 1st-grade BE students did not have grades significantly higher than did their peers who did not attend summer school. Because 9-week grades are global ratings of students' skills in the subject area., future analyses would be greatly enriched through the use of a standard assessment that is common across the end of kindergarten and the beginning of 1st-grade or one that objectively evaluates the skills taught during summer school.

It is highly recommended that BE/ESL program staff and DPE staff work together to ensure that summer school report card scores are electronically recorded in future years. The summer school report card is an objective assessment of students' early literacy skills, there are Spanish and English versions, so it is appropriate for use across BE and ESL across pre-K, kindergarten, and 1st-grade.

Literacy enrichment. At the end-of-year (EOY) in Spring 2009, roughly equal percentages of Spanish-speaking rising 1st-grade students who did attend summer school and of those who did not attend scored on grade level (i.e., 3 points or higher on the EDL). However, in 1st-grade the following fall, 59% of students who attended the summer school program were at grade level (i.e., 4 points or higher), compared with 55% of those who did not attend summer school (Figure 9).

The difference between the two groups was modest both before and after summer school. A logistic regression model tested the effect of attending summer school on BOY EDL scores. The effect of summer school was not significant after controlling for the effects of students' kindergarten EOY EDL score and gender (n = 2,190, p < .0001). This suggests that the higher BOY scores associated with summer school attendance may have been due to student selectivity (i.e., rising 1st-grade students with higher literacy scores were more likely to attend summer school; see technical notes C-11 and C-12).

Figure 9. Rising 1st-Grade Students Scoring "On Grade Level" on Evaluación del Desarrollo de la Lectura (EDL), Fall 2009



Source. AISD student records
Note. Arrows indicate statistically significant differences at the p < .05 level. On grade level at the end of kindergarten is a score of 3 out of 44. On grade level at the beginning of 1st-grade is a score of 4 out of 44, n = 2,233.

Prevention of summer skill loss. At first glance, the 1st-grade EDL on-grade-level percentages suggest that even students who attended summer school may have had some academic skill loss over the summer (Figure 9); however, it is important to take into account that the on-grade-level score at the end of kindergarten is 3 and the on-grade-level score at the beginning of 1st-grade is 4.

To more accurately evaluate whether summer school prevented skill loss, DPE staff examined the percentages of students with no literacy skill loss (i.e., students who scored the same or higher on EDL at the beginning of 1st-grade as they did at the end of kindergarten). The results of these analyses indicated that summer school attendance was associated with fewer students losing academic skills. Overall, 73% of students who attended summer school did not have a loss in their EDL score (i.e., they maintained their literacy level or made a gain), in comparison with 63% of students who did not attend summer school (results not shown; see technical note C-13).

The percentages of students without a summer literacy skill loss are summarized in Table 2, according to the number of days and the summer school campus attended. Although nearly every campus site

reflected the overall findings for students who attended summer school 11 to 20 days, some inconsistencies were found for students who attended 1 to 10 days of the summer school program. These results should be interpreted with caution because of the small number of students in the 1 to 10 day attendance group.

Table 2. First-Grade Students With No Loss in Literacy Skills, Measured by the Evaluación del Desarrollo de la Lectura (EDL), Fall 2009

Summer school campus location	Attended summer school 1–10 days		Attended summer school 11–20 days	
	Number	Percentage with no loss on EDL	Number	Percentage with no loss on EDL
Barrington	20	65%	83	87%
Dawson	42	74%	128	63%
Govalle	15	60%	119	73%
Harris	25	84%	114	71%
Kocurek	18	56%	99	77%
McBee	7	29%	136	70%
Perez	22	73%	124	80%
Pickle	36	72%	120	67%
Walnut Creek	16	75%	90	88%
Zavala	12	67%	89	74%
TOTAL	**213**	**70%**	**1,102**	**74%**

Source. AISD student records

Note. Overall, 73% of Spanish-speaking bilingual education students who attended summer school did not have a loss in their EDL score, in comparison with 63% of students who did not attend summer school.

Fiscal Considerations

Funding for the summer school program came from local funding; Title I, Part A; and Texas Education Agency (TEA) reimbursements based on a student ratio of 18:1. A detailed summary of funding sources and program costs is included in Table B1. The overall cost per student for the 2009 ELL summer school program for rising kindergarten and 1st-grade students was $473 per student (Table 3).

The BE/ESL program manager reported that she routinely hires enough summer school teachers to accommodate approximately 60% of the students who initially enroll. The present analyses suggest that this staffing level is appropriate and should be continued or lowered further in anticipation of some attrition over the month-long program.

As mentioned earlier in the report, students who commuted from other neighborhoods were less likely to attend summer school and to attend fewer days of summer school than did students who had summer school programs at their home school. If in future years BE/ESL summer school will be offered at additional neighborhood sites, this attendance estimate should be recalculated to account for the higher likelihood of attendance among neighborhood students.

Table 3. Summary of the 2009 Rising Kindergarten and 1st-Grade English Language Learning Summer School Program

Program feature	Number, percentage, or ratio
Total number of full-time-equivalent teachers	210
Total number of staff	265
Total students served	3346
Average cost per student	$ 473.03
Student-to-teacher ratio	16:1
Student-to-staff ratio	13:1
Average attendance rate	82.7%
Adjusted cost per student (based on days attended)	$ 643.07
Adjusted student-to-teacher ratio (based on days attended)	12:1
Adjusted Student-to-staff ratio (based on days attended)	9:1
Average attendance rate (excluding "no-shows")	84.7%

Source. AISD Student Records and AISD Financial Records

References

Terzian, M., Moore, K. A., & Hamilton, K. (2009). Effective and promising summer learning programs for economically disadvantaged children and youth. Retrieved from the Wallace Foundation website: http://www.wallacefoundation.org/KnowledgeCenter/KnowledgeTopics/CurrentAreasofFocus/Out-Of-SchoolLearning/Documents/Effective-and-Promising-Summer-Learning-Programs.pdf

Appendix A
Summer School Enrollment and Attendance

Table A1. Summer School Enrollment and Attendance by Campus, Summer 2009

	Enrolled for summer school	Attended summer school		Attended AISD in Fall 2009	
		Number	Percentage of original enrollment	Number	Percentage of original enrollment
Barrington ES	381	310	81%	287	75%
Dawson ES	480	383	80%	356	74%
Govalle ES	398	297	75%	276	69%
Harris ES	390	306	78%	287	74%
Kocurek ES	484	374	77%	357	74%
McBee ES	539	418	78%	385	71%
Perez ES	442	314	71%	289	65%
Pickle ES	500	385	77%	357	71%
Walnut Creek ES	372	306	82%	284	76%
Zavala ES	321	253	79%	242	75%
TOTAL	**4,307**	**3,346**	**78%**	**3,120**	**72%**
Rising Kindergarten	**2,087**	**1,642**	**79%**	**1,551**	**73%**
Rising 1st Grade	**2,220**	**1,704**	**77%**	**1,569**	**72%**

Source. AISD Student Records, 2009

Note. Some percentages add up to more than 100% due to rounding. "Eligibility" is based on students being placed in a bilingual education or English as a second language program in Spring 2009 and having an active status. "Enrolled for summer school" is based on students having an "enter date" for summer school and active status. "Attended summer school" is based on students attending at least one day of summer school. "Attended AISD in Fall 2009" provides number of students enrolled in summer school for a particular campus who enrolled in *any* AISD school in Fall 2009.

Table A2. Summary of Rising Kindergarten Students' Enrollment and Attendance

	Eligible students Spring 2009	Summer school enrollment		Summer school attendance		Attended AISD in Fall 2009	
	Number	Number	Percentage of eligible students	Number	Number	Number	Percentage of eligible students
Gender							
Male	1421	1019	72%	802	56%	765	54%
Female	1423	1068	75%	840	59%	786	55%
Home language							
Spanish	2621	1930	74%	1528	58%	1446	55%
Other	223	157	70%	114	51%	105	47%
Program placement							
Bilingual	2549	1892	74%	1503	59%	1424	56%
English as a second language	295	193	65%	138	47%	127	43%
Economic disadvantage							
Free or reduced lunch	2522	1853	73%	1482	59%	1459	58%
Not eligible	196	130	66%	95	48%	98	50%
Summer school campus							
Same as home campus	417	332	80%	280	67%	261	63%
Different from home campus	2427	1755	72%	1362	56%	1290	53%
TOTAL	**2844**	**2087**	**73%**	**1642**	**58%**	**1551**	**55%**

Source. AISD student records; Public Education Information Management System (PEIMS) 110 records

Notes. Some students (*n* = 126) have missing data on free and reduced lunch status because they were not enrolled in AISD on the PEIMS snapshot date in October 2009.

Table A3. Summary of Rising 1st-Grade Students' Enrollment and Attendance

	Eligible students Spring 2009	Summer school enrollment		Summer school attendance		Attended AISD in Fall 2009	
	Number	Number	Percentage of eligible students	Number	Percentage of eligible students	Number	Percentage of eligible students
Gender							
Male	1528	1133	74%	877	57%	799	52%
Female	1467	1087	74%	827	56%	770	52%
Home language							
Spanish	2802	2104	75%	1624	58%	1505	54%
Other	193	116	60%	80	41%	64	33%
Program placement							
Bilingual	2625	2007	76%	1566	60%	1451	55%
English as a second language	370	213	58%	138	37%	118	32%
Economic disadvantage							
Free or reduced lunch	2724	2030	75%	1586	58%	1510	55%
Not eligible	192	106	55%	74	39%	61	32%
Summer school campus							
Same as home campus	655	523	80%	436	67%	407	62%
Different from home campus	2340	1697	73%	1268	54%	1162	50%
TOTAL	**2995**	**2220**	**74%**	**1704**	**57%**	**1569**	**52%**

Source. AISD student records; Public Education Information Management System 110 records.

Note. Some students (*n* = 76) have missing data on free and reduced lunch status because they were not enrolled in AISD on the PEIMS snapshot date in October 2009.

Appendix B

Rising Kindergarten and 1st-Grade English Language Learner Summer School Program Costs and Funding Sources

Table B1. Summer School Funding for Rising Kindergarten and 1st-Grade Students, 2009

	Local funds	Title I funds	Texas Education Agency funds	TOTAL	Percentage
Instruction					
Extra duty	$640,388.40	$294,938.00	$22,408.00	$957,734.40	58%
Part-time hourly	-	-	$31,739.78	$31,739.78	2%
Other costs	$130,937.82	$21,310.91	$20,220.20	$172,468.93	10%
Curriculum and instruction					
Staff development					
Extra duty	$2,175.00	$9,385.00	$59,017.70	$70,577.70	4%
Part-time hourly	-	-	$269.45	$269.45	<1%
Overtime	-	-	$91.84	$91.84	<1%
Other costs	$8,775.72	-	-	$8,775.72	1%
School leadership					
Extra duty	$18,689.67	$44,400.00	$23,310.00	$86,399.67	5%
Part-time hourly	$8,937.60	-	$16,281.00	$25,218.60	2%
Overtime	$1,405.54	-	-	$1,405.54	<1%
Instructional leadership	$2,490.93	-	-	$2,490.93	<1%
Plant maintenance and operations					
Part-time hourly	$3,410.00	-	-	$3,410.00	<1%
Overtime	$27,517.27	-	-	$27,517.27	2%
Other costs	$3,615.80	-	-	$3,615.80	<1%
Health services	$28,182.20	-	-	$28,182.20	2%
Payroll benefits and budgets	$83,491.22	$54,932.79	$24,443.23	$227,904.04	14%
TOTAL	**$960,017.17**	**$424,966.70**	**$197,781.20**	**$1,582,765.87**	**100%**

Source. AISD financial records. Note, 28R included $20,220.20 for reading materials and general supplies that were coded without a program in the fiscal records. 28R-11-6329-00699-9-24-0-00 and 28R-11-6399-00-699-9-24-0-00.

Appendix C
Technical Notes

C-1 A total of 2,844 eligible rising kindergarten students and 2,995 rising 1st-grade students were enrolled in Spring 2009. Sixteen ELL Spanish-speaking students had both BE and ESL designations in student records (STXL); for presented analyses, students with BE and ESL designations were grouped with BE students.

C-2 To evaluate whether any selectivity occurred in ELL summer school attendance across grade levels, logistic regression models were used to test six possible factors contributing to attendance: gender, home language (Spanish/non-Spanish), program placement (BE/ESL), economic disadvantage, whether a student's home campus (Spring 2009) was the same as the summer school campus, and the interaction effect of program placement and home language (due to the high correlation between home language and program placement). The four resulting student groups were: (a) BE Spanish-speaking, (b) BE non-Spanish-speaking, (c) ESL Spanish-speaking, and (d) ESL non-Spanish-speaking. All logistic regression models in this paper used backward elimination to remove control variables that were not significant to the model and used the Wald-Chi Square test criterion to determine whether effects were necessary for overall goodness of fit for the models.

C-3 The predicted probabilities presented in Figure 3 represent a comparison with the largest group of summer school attendees (i.e., economically disadvantaged students from non-summer school campuses).

C-4 The odds ratios are for comparisons between two groups. Greater predicted probabilities were used for the comparison between the four groups based on home language and program placement. To simplify interpretation of Figure 3, the percentages used were interpreted as "percentage more likely". Odd ratios are the ratios of occurrence for one group versus occurrence for another group. For example, in a fair coin toss, the ratio would be 1:1, or 1/1 (1.0). The predicted probability is the chances of an occurrence for one group over total occurrences. For example, in a fair coin toss, the predicted probability would be 1:2, or ½ (.5).

C-5 To ensure that the largest numbers of students would have complete data in each analysis, the Fall 2009 academic performance analyses used the economic disadvantage indicator from the Student Economic Status 2009 table. However, the summer school attendance analyses used the economic disadvantage indicator from the Supplemental Nutrition Assistance Program (SNAP) 2008 table.

C-6 Because of limited variance in the number of weeks students attended summer school, analyses tested selectivity via an ordered, cumulative logistic regression model using backward elimination for each grade level. In this report, DPE staff report in increased likelihood of students attending additional weeks of school; however, the more precise way of interpreting an ordered logistic model is to compare one group with the group at the next level above or below. In this report, each group of students was compared with the group of students attending one additional week of summer school.

C-7 Total summer school enrollment was 4,367 students; however, 389 (9%) of these students did not enroll in AISD in Fall 2009 and thus were excluded from the academic outcomes analyses.

Among kindergarteners in Fall 2009, 1,413 BE students and 144 ESL students attended summer school; 1,192 BE and 210 ESL students did not attend summer school. Among 1st graders in Fall 2009, 1,439 BE and 132 ESL students attended summer school; 1,156 BE and 250 ESL students did not attend summer school. Other exclusions to the academic outcomes analyses included 11 students with inconsistent or missing ELL status, program placement, or home language information in student records.

C-8 DPE staff tested group differences in subject area grades using analysis of variance (ANOVA) for multiple groups with the Fisher's least significance difference test. In addition to comparing students who did not attend summer school, students who attended summer school 1 to 10 days, and those who attended 11 to 20 days, DPE staff examined mean differences for students attending 15 to 20 days; however, the final pattern of results was not substantively different.

C-9 DPE staff used Test de Vocabulario en Imagenes Peabody (TVIP) scores to control for prior achievement as a predictor of kindergarten reading grades in an ordered logistic model because TVIP scores are the only assessment pre-K students take that measure verbal ability.

C-10 The majority of the students who had both EOY 2008 and BOY 2009 assessment scores were BE Spanish-speakers. Too few students took the Developmental Reading Assessment (DRA) in English to derive valid comparisons.

C-11 No significant differences were found on EDL performance based on the number of days of summer school attendance.

C-12 When a logistic regression model was applied to test the effect of attending summer school on BOY DRA scores, the effect of summer school was removed from the model after controlling for the effects of a student's 2008 EOY DRA score and gender, using backward elimination.

C-13 DPE staff tested the association between summer school attendance and absolute loss in EDL scores using the proportions of means test; 73% of 1st-grade students who attended summer school had no loss from EOY 2008 to BOY 2009, compared with 63% who did not attend summer school and had no score loss. The loss was calculated in the following way: (BOY 2009 – EOY 2008) < 0. Results were significant at $p < .0001$.

C-14 The cost per student calculation assumed students attended the program for the full 20 days. The adjusted cost per student was based on the actual number of days students attended summer school. The multiplier "student * days" proportionally weighed the cost of the program to the number of students served by days attended. For example, if all 3,346 students attended all 20 days, then "student * days" would equal 66,920; however, the actual "student * days" equaled 49,225. The total program cost was divided by 49,225, which resulted in an adjusted program cost of $669.50 per student.

C-15 The adjusted student-to-teacher ratio and student-to-staff ratio accounted for the total number of days all students attended, using a weight calculated by (student * days). (Actual student * days) was divided by (Total possible student * days) and multiplied by the total number of students to gain average number of students over the 20-day period (n = 2461.25). This result was divided by 210 full-time-equivalent teachers and 265 staff to determine the adjusted student-to-teacher and student-to-staff ratios.