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PUBLIC SCHOOLS**

Summer School Evaluation: 2008

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Executive Summary

The APS Center for Extended Learning (CELSA) offers summer school to students in grades 1 through 12. At the elementary and middle school levels, students must qualify for summer school with low benchmark assessment scores in either reading or math; services are free. At the high school level, students pay for summer school classes in order to either correct a low grade or to take courses ahead of time to free their regular school schedule. This research questions for this report are:

1. Is APS successful in filling and maintaining attendance for all available summer school slots?
2. Do students make appreciable academic gains during summer school?
3. Does summer school address the needs of some NCLB subgroups of students better than others?

For the elementary summer school program, only about one third of summer school student openings are successfully filled and completed. We are unable to determine whether enrollment is low, or whether enrollment is reasonable or high but many students drop out. Students who do complete the program show modest academic growth in their A2L scores, particularly among beginning step students in reading and nearing proficient students in math. A detailed examination of 3rd grade scores shows that all NCLB subgroups respond to summer school approximately equally.

For the middle school summer program, enrollment is high, with about 84% of available opening filled by the start of summer school. Most students who enroll in summer school complete it, three out of four. Students who complete the program show modest academic growth in their A2L scores, especially nearing proficient students in math and both beginning step students in reading. In addition, improvement in math scores increases dramatically by grade level for all students. A detailed examination of 8th grade scores shows that non-ELL students seem to respond better to reading instruction than ELL students. All NCLB subgroups seem to respond equally well to math instruction.

For the high school summer program, the great majority of enrolled students complete their courses with a passing grade, 93%, most with an 'A' or a 'B'. Most 12th grade student attending summer school, 88%, received the credits necessary for graduation. Detailed analyses of Algebra I, Biology I, and 9th grade English showed some minor differences among NCLB subgroups. Most notably, in Biology I both Caucasians and non-FRLP students earned grades about one grade point higher than Hispanics and FRLP students, respectively.

For this research, one of the most important limits is the outcome measure of effectiveness, A2L, since the assessment does not narrowly cover specific concepts addressed during summer school. Another limitation is the absence of attendance data, which would help to indicate the amount of instruction students actually received during summer school. Finally, this study does not compare summer school attendees' outcomes with a comparison group of similar students. This study therefore has a limited ability to make conclusions about the effectiveness of summer school.

Summer School Evaluation: 2008

The APS Center for Extended Learning (CELSA) offers summer school to students in grades 1 through 12. At the elementary and middle school levels, students must qualify for summer school with low benchmark assessment scores in either reading or math; services are free. At the high school level, students pay for summer school classes in order to either correct a low grade (credit recovery) or to take courses ahead of time to free their regular school schedule (advancement).

Planning and managing summer school are taxing processes. CELSA is responsible for: locating summer school sites; hiring principals, teachers and staff; providing and coordinating materials; overseeing registration; organizing payments for summer school; promoting services to APS and non-APS students; establishing registrations processes; and scheduling courses. CELSA is a small department; the summer school program is managed by one director (who is also in charge of Charter Schools), one instructional manager, two coordinators, and one administrative assistant. The fact that summer school crosses fiscal years complicates planning as available funding is often unknown until time is short.

This report discusses the attendance and achievement of students attending summer school the summer following the 2007-2008 school year. Because of major program differences by school level, the results section of this report is divided into three major sections – Elementary School, Middle School, and High School. In each section, descriptive statistics¹ are used to answer the following research questions:

1. Is APS successful in filling and maintaining attendance for all available summer school slots?
2. Do students make appreciable academic gains during summer school?
3. Does summer school address the needs of some NCLB subgroups of students better than others?

Measures

Attendance. At the elementary and middle school levels, three enrollment variables are of interest: the number of openings per site, the number of students enrolled at each site at the start of summer school, and the number of students completing summer school. The number of openings per site was set at 140 at middle school sites and stand-alone elementary sites and at 84 at K-3 Plus sites. CELSA gathered enrollment directly from schools. The most recent available enrollment information is June 2nd. This information is adequate for middle school, which started June 7th; but it is considered unusable for elementary summer school since elementary summer school started a month later. For the purposes of this report, 1st – 8th grade students who

¹ We do not provide tests of statistical significance in this study because such tests might imply an inappropriate certainty about the effectiveness of summer school. Available outcome data are not sufficiently related to the intervention, nor are pre- and post- measures sufficiently independent from each other to be able to compare scores inferentially.

completed the summer A2L in either math or reading were considered to have completed summer school.²

At the high school level, two enrollment variables are of interest – registration and completion. Two sources of information are used. Schoolmax provides outcomes (grades) for registered students; but it is unclear from these records whether students who dropped courses are still registered or whether they were removed. Schools also supplied information on student outcomes, including the number of students who dropped out. Because these sources of information differ slightly, both are reported.

Academic Gains. For elementary and middle school, we use spring and summer A2L math and reading scores to measure achievement for grades 3 through 8. The summer administration of A2L is particular to summer school students and is a repeat of the fall A2L assessment. Typically, schools begin to administer A2L approximately three weeks after summer school begins.

For high school, we use summer school grades, available through SchoolMax. We also examine the number of courses dropped as well as the number completing graduation requirements through summer school as reported to CELSA directly from schools.

I Elementary School

For elementary school students, summer school is exclusively a remedial program for struggling students. Students must earn less than proficient scores in math and/or reading on the district benchmark assessment, Assess To Learn (A2L) in either the fall (Priority I) or the spring (Priority II) in order to be eligible for summer school. Additionally, their Academic Improvement Plan (AIP) must indicate summer school as a teacher-directed intervention and the school's Student Assistance Team (SAT) must have approved this recommendation.³ Summer school is staffed by current licensed APS teachers. Math and reading remedial services are offered; and students are required to take both subjects whether or not they qualify in both subjects. The school day is rounded out with music, art, and P.E. instruction as well. The "standard" summer school elementary program lasts for four weeks (20 days), six and a half hours a day, and is offered to students who were in 1st thru 5th grade in the 2007-08 school year. In 2008, 10 APS "stand alone" schools provided remedial summer school services to all five grades.

Another 24 elementary schools offered both summer school and another extended learning program, K-3 Plus. K-3 Plus is a volunteer program for students entering Kindergarten through

² Dosage, or the amount of an intervention students receive, is considered a key factor that may moderate the impact of a program, and therefore usually is taken into account in thorough program evaluations. In this case, dosage might be measured by attendance, which was not collected electronically and is therefore considered too expensive and time-consuming to retrieve. Theoretically, the lack of attendance data should not be problematic in this case because students with two or more unexcused absences should have been eliminated from the program. In practice, anecdotal evidence suggests many exceptions were made at all levels of schools. For example, in some schools enrollment increased after the first week of summer school. Anecdotal evidence also suggests schools were lenient with attendance requirements.

³ These requirements could and were overridden by CELSA staff for some students.

3rd Grade. This program provides an extra 25 days of instruction before the start of the regular school year. Unlike summer school, K-3 Plus is a “jump start” to the next school year, rather than a review of material from the previous year. In 2008, only K-3 Plus was offered to students who were in kindergarten through 2nd grade in the 2007-08 school year at these 24 schools. In other words, the K-3 Plus Program *replaced* summer school for 1st and 2nd graders. While RDA found no evidence that K-3 Plus schools particularly targeted or gave priority to students who qualified for summer school, evidence does suggest that 1st and 2nd grade students attending K-3 Plus were academically behind their peers.⁴ Though it is beyond the scope of this study, APS may benefit from further research comparing the effectiveness of K-3 Plus’ “jump start” philosophy and summer school’s remedial approach in helping boost 1st and 2nd grade students’ learning. At the 24 K-3 Plus schools, remedial summer school was offered to qualifying 3rd through 5th grade students, following the same 20 day/ six and a half hours a day program as in the stand-alone sites.⁵

Since student eligibility is based on a number of factors, disparate data systems must be combined for registration purposes for both elementary and middle school. School personnel find the registration process confusing, though the process has been stream-lined over time. More students are eligible than the district can support. Yet consistent attendance is hard to achieve—likely because summer school requires no monetary commitment, nor can students improve their school records through summer school. Despite a relatively early registration process, with parents signing commitment forms in mid-May, many openings are still available after the start of summer school in early June (middle school) or early July (elementary school). Many of these available spaces are eventually filled; but by this time the regular registration process is unavailable and each new registration requires an “exception” by CELSA staff, each of which takes time and is difficult to trace later. Attendance is taken on paper-and-pencil forms, as is the tool used to collect teacher feedback about the program after its conclusion. CELSA staff do not currently have time to process this important information in a timely manner.

In 2008, CELSA faced additional challenges. All the coordinating staff were new to the job. Existing elementary and middle school materials had been contaminated due to asbestos abatement at the Stronghurst Complex; and CELSA staff were unable to order new materials in a timely fashion as they had to wait for the new fiscal year to begin. Many students, especially at the elementary school level, went without materials for half or more of summer school. The demands of dealing with materials after summer school started, as well as the significant illness of one staff member, meant CELSA was unable to keep up with enrollment records and other data requirements. The curricular programs were new to many summer school teachers, thus there was a very short time for teachers to familiarize themselves with the instructional programs used. And for the first time, students were required to take the A2L exam as an outcome measure for summer school.

⁴ Carrillo, N. 2008. “A Formative Evaluation of the K-3 Plus Program: 2007-2008.”

http://www.rda.aps.edu/RDA/Documents/Publications/07_08/K3_Plus_Formative_Evaluation_I.pdf

⁵ Staff of the Center for Extended Learning suspect that some 3rd grade classrooms may have served a mix of summer school and K-3 Plus students in some K-3 Plus sites, although this practice was discouraged. To date, 19 of the 24 schools have reported this did not take place. The remaining schools have not yet responded to the inquiry.

In this report, special attention is paid to the 3rd grade academy. Pedagogically, academic curricula change significantly from “learning to read” in 3rd grade and earlier to “reading to learn” in 4th grade.⁶ Similarly, third grade is a flagship year for mathematics, when teaching moves from simple computation to more complex skills.⁷ CELSA therefore consider the 3rd grade academy crucial to helping struggling students gain mastery of skills before a significant shift in academic expectations.

Results

Is APS successful in filling and maintaining attendance for all available summer school slots?

Each stand-alone elementary school was allotted 140 summer school openings (for 1st – 5th grades), while each K-3 Plus elementary school was allotted 84 openings (for 3rd - 5th grades). As mentioned above, we cannot know the number of available elementary school spaces filled at the start of summer school since reliable data is unavailable. We can only examine the percentage of openings successfully completed by students.

Table 1 describes the completion rate for each summer school site. For both stand-alone school sites and K-3 Plus school sites, the range of completion rates is high and the average is low. Overall, about a third of openings were successfully completed by students. For stand-alone sites, completion rates range from 0% to 38%, and the average rate is about 24%. K-3 Plus sites fared better, with a range of 0% to 77%, and an average rate of about 38%.

Table 1: Elementary Summer School Completion Rates

School	# Openings	# Completed	% Completed
TOTAL	3500	1116	32%
Stand-alone school 1	224	42	30%
Stand-alone school 2	140	0	0%
Stand-alone school 3	140	43	31%
Stand-alone school 4	140	53	38%
Stand-alone school 5	140	34	24%
Stand-alone school 6	140	44	31%
Stand-alone school 7	140	17	12%
Stand-alone school 8	140	41	29%
Stand-alone school 9	140	33	24%
Stand-alone school 10	140	42	33%
K-3 Plus school 1	84	35	42%
K-3 Plus school 2	84	31	37%
K-3 Plus school 3	84	21	25%

⁶ National Institute for Literacy. 2008, November 11.

http://www.nifl.gov/partnershipforreading/questions/questions_about.html

⁷ Education.com. 2008, November 11. http://www.education.com/magazine/article/third_grade_math/

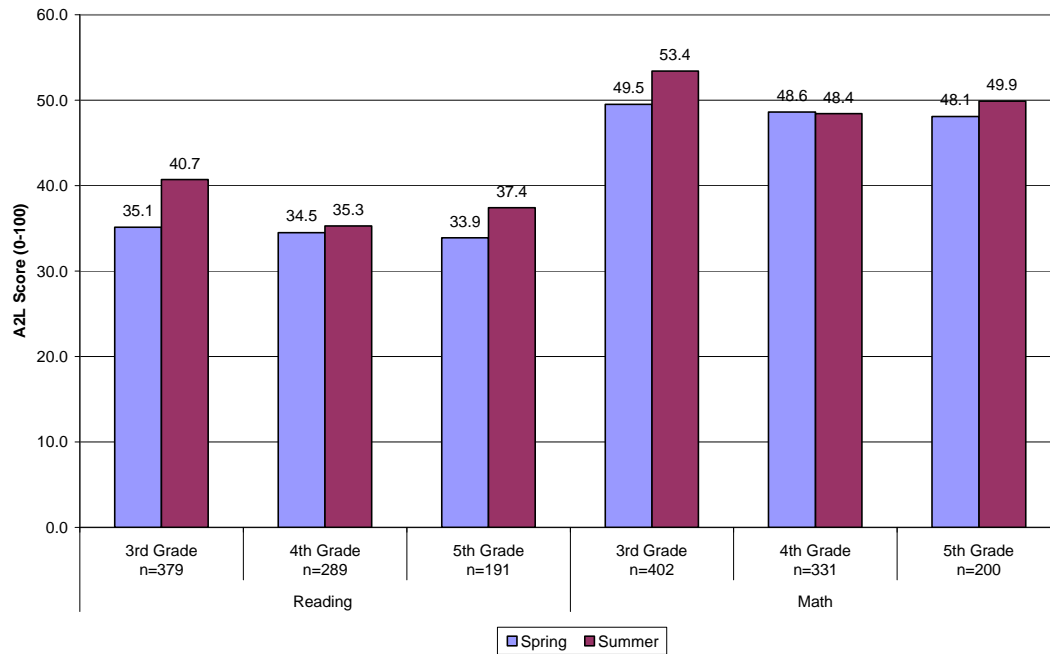
Table 1 continued

School	# Openings	# Completed	% Completed
K-3 Plus school 4	84	49	58%
K-3 Plus school 5	84	65	77%
K-3 Plus school 6	84	25	30%
K-3 Plus school 7	84	12	14%
K-3 Plus school 8	84	42	50%
K-3 Plus school 9	84	21	25%
K-3 Plus school 10	84	45	54%
K-3 Plus school 11	84	24	29%
K-3 Plus school 12	84	12	14%
K-3 Plus school 13	84	47	56%
K-3 Plus school 14	84	28	33%
K-3 Plus school 15	84	0	0%
K-3 Plus school 16	84	37	44%
K-3 Plus school 17	84	35	42%
K-3 Plus school 18	84	53	63%
K-3 Plus school 19	84	42	50%
K-3 Plus school 20	84	26	31%
K-3 Plus school 21	84	38	45%
K-3 Plus school 22	84	48	57%
K-3 Plus school 23	84	31	37%
K-3 Plus school 24	84	0	0%

Do students make appreciable academic gains during summer school?

Achievement results are limited to 3rd through 5th grades as these are the only elementary grades for which A2L is administered during the regular school year. Figure 1 shows the average A2L reading and math scores for summer school participants in spring 2008 and summer 2008 for 3rd, 4th, and 5th grades. Only students for whom both spring and summer A2L scores are included.

Figure 1: Average A2L Scores for Elementary Summer School Students



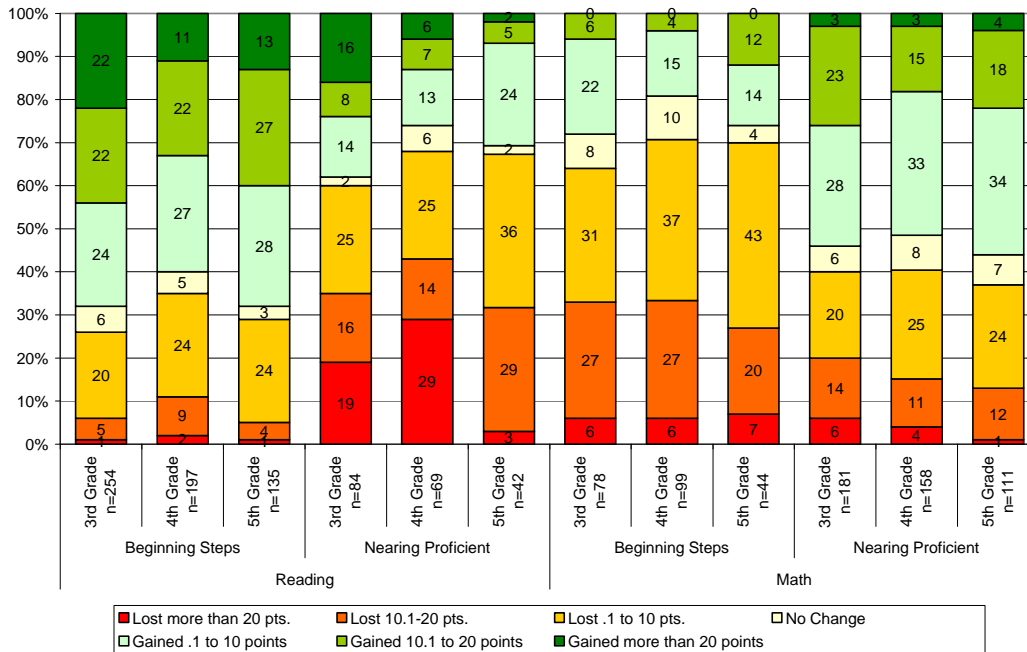
Overall, growth in A2L scores is modest for both reading and math. Third grade students show the most growth, almost six percentage points in reading and about four percentage points in math. Fifth grade students’ scores improved as well though the differences in pre- and post-scores are only about half of those for 3rd graders. In both reading and math, 4th grade students show little or no gain.

A more detailed way to examine achievement is to observe the actual differences in scores from the spring A2L to the summer A2L. An important factor to consider is the proficiency level of students in spring 2008. Programs often differ in their ability to serve “bubble” students that are close to proficiency or those that are substantially behind.

Figure 2 details the percentage of students who gained or lost points in 10- point intervals by spring proficiency level. Only students considered ‘Beginning Steps’ (scores under 41) or ‘Nearing Proficient’ (scores between 41 and 60) are included.⁸ Green boxes denote an increase in A2L scores from spring to summer, while orange and red boxes denote a decrease.

⁸ Some students qualified in only math or reading, yet received instruction in both subjects. Among 3rd through 5th grade students, 3% of students earned proficient scores (61 or higher) in the spring administration of A2L reading, and 26% earned proficient scores in the spring administration of A2L math; these students are excluded.

Figure 2: Gains and Losses in A2L Scores for Elementary Summer School Students



Careful analysis of Figure 2 reveals interesting patterns. Looking first at reading, the impact of summer school on scores is notably different for students that come to the program as ‘beginning steps’ or ‘nearing proficient.’ Clearly, summer school has a much more beneficial impact for beginning steps students, about two-thirds of which gained rather than lost points. On the other hand, ‘nearing proficient’ students are more likely to lose points than gain them.⁹ One possible explanation is that through design or teacher emphasis, the reading curriculum focused most on rudimentary elements needed by the majority of students, those that are beginning steps. Nearing proficient students may benefit little from a curriculum that does not challenge them, and may have, in fact, caused some confusion. Alternatively, nearing proficient students may have learned a great deal, but the A2L assessment was not able to detect their growth as well as the growth of beginning step students.

There are also comparatively minor differences between grades. For both beginning step and nearing proficient students, 3rd grade and 5th grade students are more likely than 4th grade student to increase A2L reading points and less likely to lose points. For instance, 40% or more of the beginning step students in 3rd and 5th grades improved their A2L reading scores by ten or more points, compared to 33% of 4th graders. In addition, 29% of 4th grade nearing proficient students lost 20 points or more.

Interestingly, math has very different patterns. In this case, for all three grades, nearing proficient students are more likely to benefit from attending summer school than beginning step students.

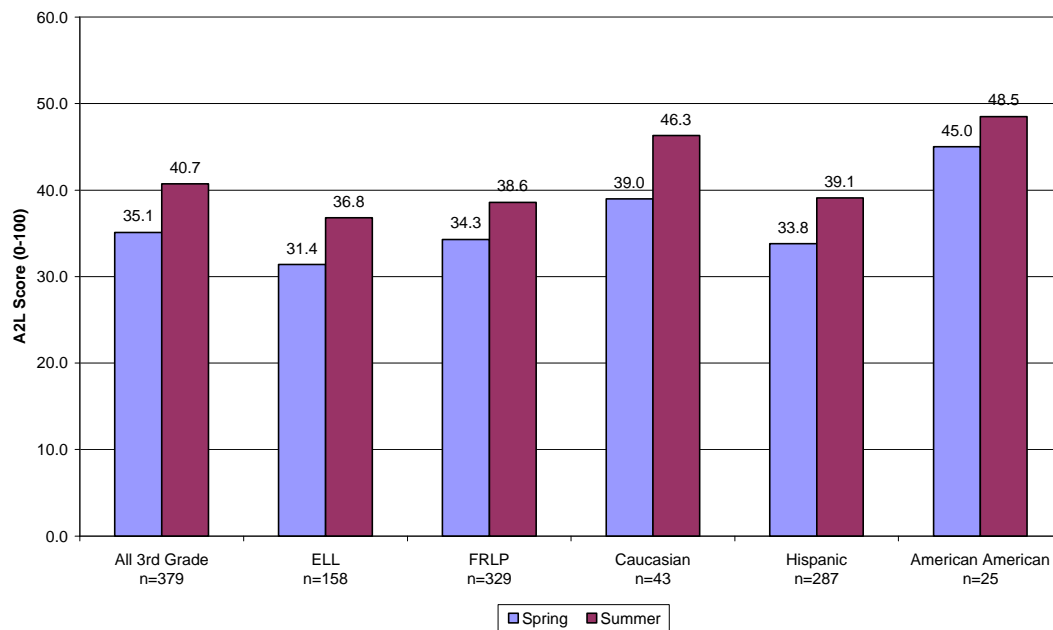
⁹ While it may be tempting to conclude this affect is related to the ceiling effect (nearing proficient students have less room to improve than beginning step students), nearing proficient students earned at most 60 of 100 possible points in the spring, suggesting plenty of room for improvement.

Over half of 3rd, 4th, and 5th grade nearing proficient students gained points on their A2L, compared to only about a quarter of beginning step students. Since more students are nearing proficient than beginning steps in math, again the curriculum may be designed or administered to reach the majority of students; the math curriculum may have been too difficult for beginning step students. It is also again possible that the A2L assessment simply did not detect growth among beginning step students. And while less pronounced for math than reading, again 3rd and 5th grade students showed more improvement than 4th grade students. Finally, overall the number of students making large improvements of 20 or more points is much less common in math than in reading.

Does summer school address the needs of some NCLB groups of students better than others?

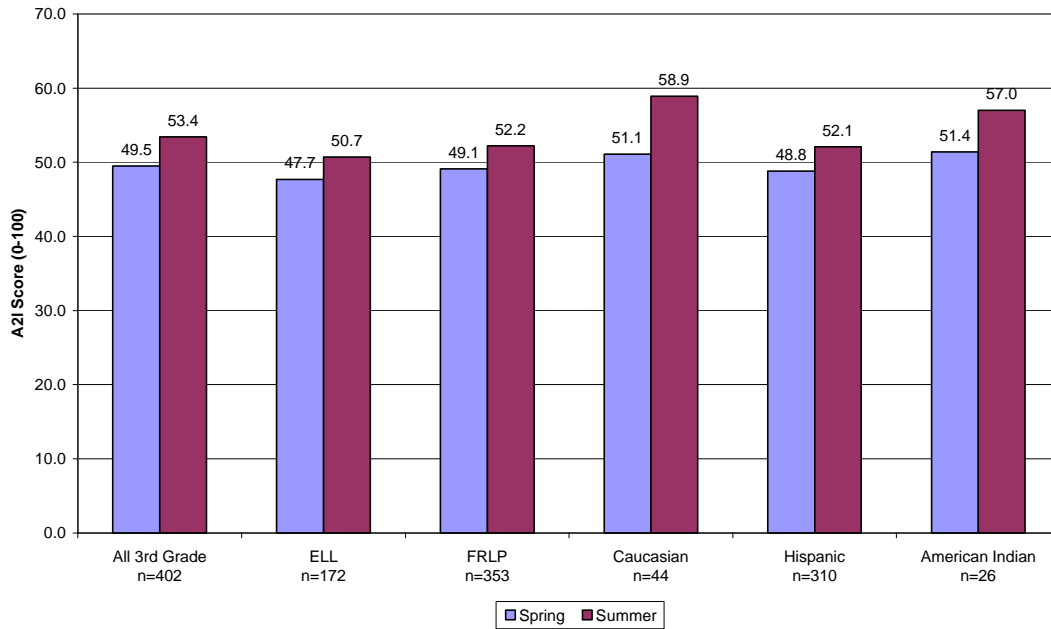
We now turn to a more detailed analysis of third grade only, examining changes in A2L by NCLB subgroups.¹⁰ Figure 3 shows average spring and summer A2L scores for reading; and Figure 4 shows the same information for math. (Subgroups with fewer than 20 students are omitted.) Perhaps the first information to note is that most 3rd grade summer school attendees receive the Free or Reduced Lunch Program (FRLP) services (87%), most are Hispanic (76%), and many are English Language Learners (ELL - 42%).

Figure 3: Average 3rd Grade Reading A2L Scores for Summer School Students



¹⁰ Importantly, students may be represented in up to three categories. In addition to an ethnic group, a student may also be an ELL and/or FRLP student.

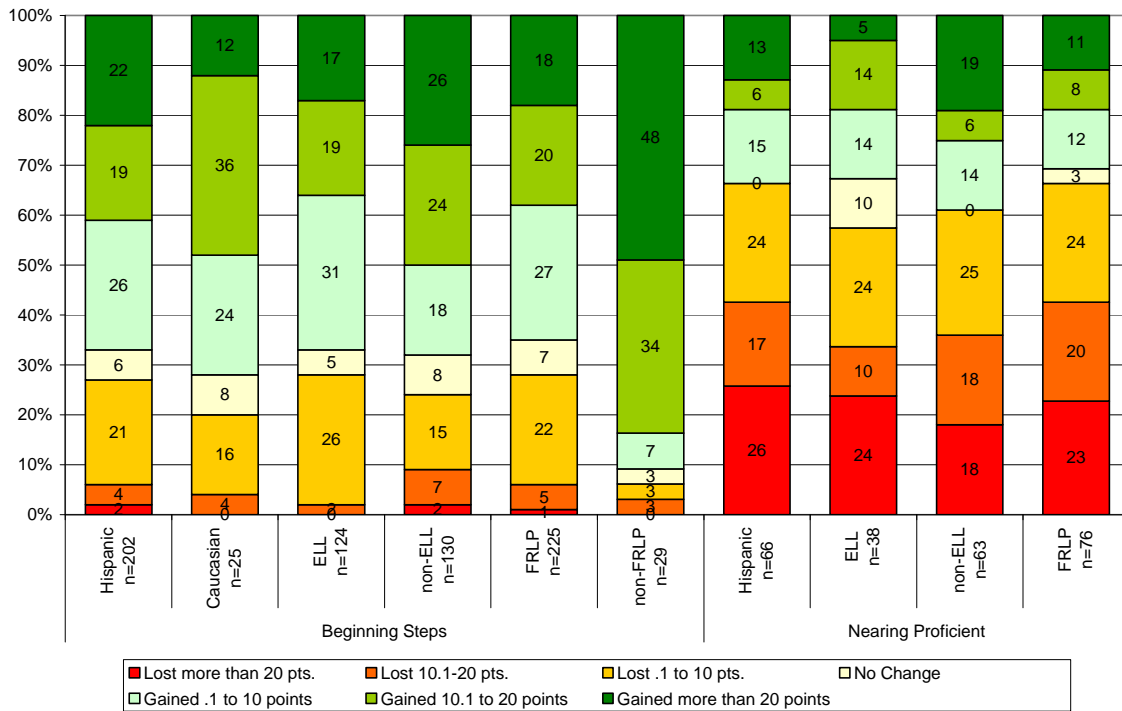
Figure 4: Average 3rd Grade Math A2L Scores for Summer School Students



While subgroups have somewhat different average A2L scores upon entering summer school, especially in reading, all subgroups respond approximately equally well to the summer school program. Overall, the average reading A2L scores increased by about 5½ points after summer school; while average math A2L scores increased by a little less than 4 points. In both cases, it appears that Caucasians may improve scores more than other groups; however, this may have to do with different distributions of nearing proficient and beginning step students in each of the subgroups.

Figure 5 examines the change in scores for NCLB subgroups of elementary summer school students while controlling for spring proficiency level for reading. (Again, subgroups with fewer than 20 students are omitted.)

Figure 5: Gains and Losses in A2L Scores for Elementary School Students by NCLB Group

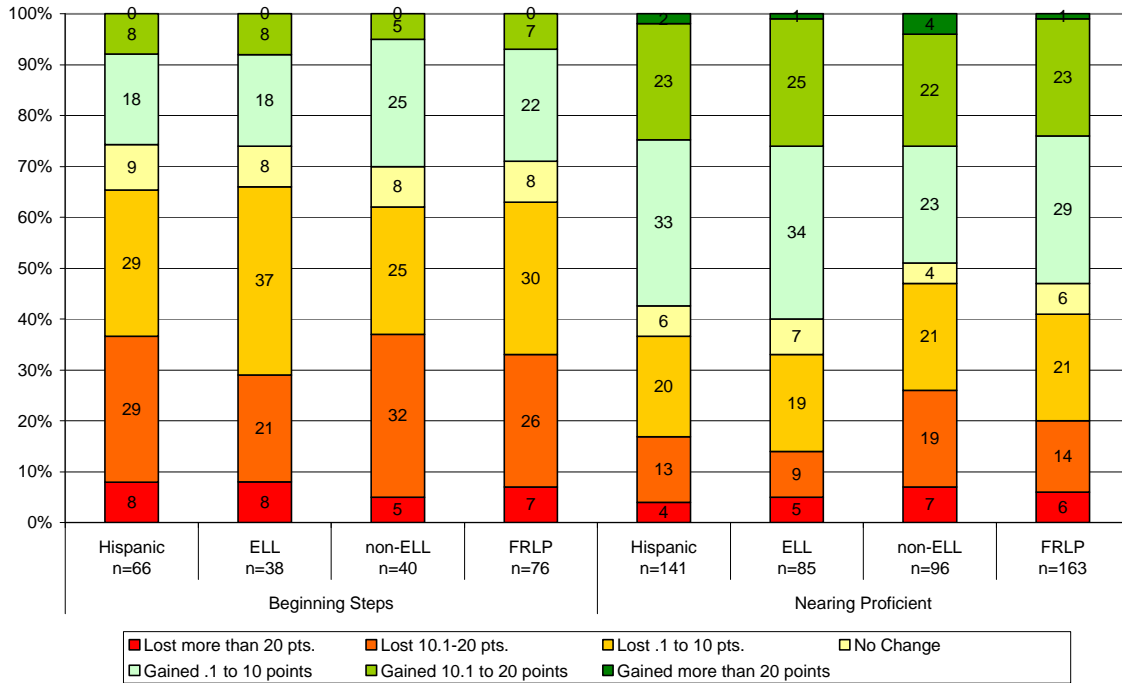


The results in Figure 5 make it clear that the impact of summer school varies little by NCLB subgroup once spring proficiency level is controlled. For instance, the percentage of beginning step students that improve their scores in reading by ten points is approximately 40% no matter the subgroup, with the exception of the relatively few non-FRLP students (29) in the sample. In addition, very few beginning step students lost more than ten points in reading, no more than 6% in any NCLB subgroup.

The trend is also similar among nearing proficient students by subgroup. The percentage of students gaining ten or more points varies only from 19% to 25%; and the percentage of students losing ten or more points is similarly high (unfortunately), ranging from 34% to 43%.

Figure 6 shows the same analysis for math. The trend is again consistent across subgroups. The percentage of beginning step students gaining 10 or more points on A2L is no more than 8% for any subgroup; the percentage losing 10 or more points varies but little from 29% to 37%. And among nearing proficient students, the percentage of students gaining 10 or more points is remarkably consistent, varying only from 24% to 26%. The percentage of nearing proficient students that lose 10 or more points also varies slightly, from 14% of ELL students to 26% of non-ELL students.

Figure 6: Gains and Losses in A2L Math Scores for Elementary Summer School Students by NCLB Subgroup



In sum, completion rates in elementary school are low. We are unable to determine whether enrollment is low, or whether enrollment is reasonable or high but many students drop out. Among students that complete summer school, beginning step students improve A2L scores much more than nearing proficient students; yet the opposite is true in math. Finally, these results do not vary appreciably by NCLB subgroup.

II Middle School

Summer school for middle school is similar in many ways to summer school for elementary school, with the same eligibility requirements and registration process. In 2008, CELSA faced many of the same challenges, particularly high work load, lost materials, and new programs for teachers. Many middle school students went without materials for half or more of summer school. CELSA was unable to provide services in subjects other than reading and math in middle school, as they had in previous years. As in the elementary summer school program, students were required to take the A2L exam as an outcome measure.

Results

Is APS successful in filling and maintaining attendance for all available summer school slots?

For middle school, enrollment in the week prior to summer school is available. Table 2 shows the number of openings, enrollment, and completion rates for each of the 8 middle schools.

Enrollment is fairly high, with 84% of available openings filled by June 2nd. The majority of openings are filled in all schools; and three of the schools filled all available openings.

Completion rates are similar across the eight schools. The completion rate as a function of enrollment suggests that most students who start summer school complete summer school, three out of four. As a function of the number of openings, about twice as many middle school students complete summer school compared to elementary school students.

Table 2: Middle School Summer School Enrollment and Completion Rates

School	# Openings	June 2 Enrollment	Enrollment Rate	# Completions	Completion rate (enrollment)	Completion rate (openings)
TOTAL	1120	943	84%	705	75%	63%
School 1	140	104	74%	83	59%	59%
School 2	140	140	100%	108	77%	77%
School 3	140	87	62%	68	78%	49%
School 4	140	140	100%	108	77%	77%
School 5	140	91	65%	71	78%	51%
School 6	140	118	84%	93	79%	66%
School 7	140	123	88%	88	72%	63%
School 8	140	140	100%	86	61%	61%

Do students make appreciable academic gains during summer school?

Figure 7 shows the average A2L reading and math scores for summer school participants in spring 2008 and summer 2008 for 6th, 7th, and 8th grades. Only students for whom both spring and summer A2L scores are included.

As with elementary summer school, gains in A2L scores among middle school summer students are modest overall. Changes in reading scores are greater than in math. Sixth graders gained an impressive 8 points; 8th graders gained almost 5 points; and 7th graders gained less than 1 point. In math, the average score actually decreased more than three points. Seventh graders gained about two points; and eighth graders increased their scores the most with about a 5-point gain.

Figure 7: Average A2L Scores for Middle School Summer School Students

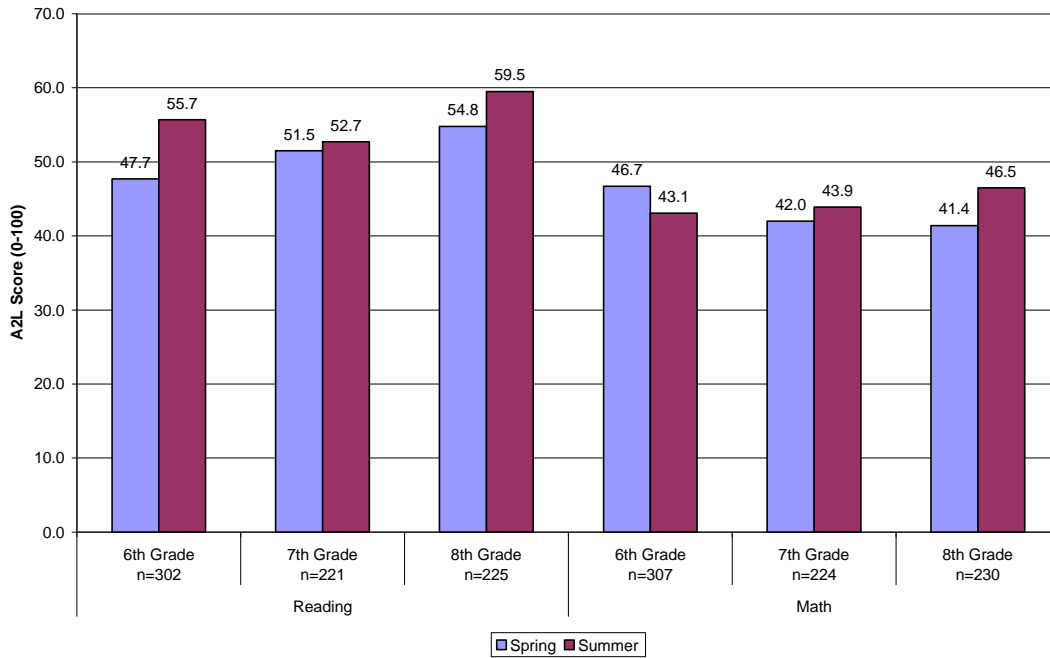
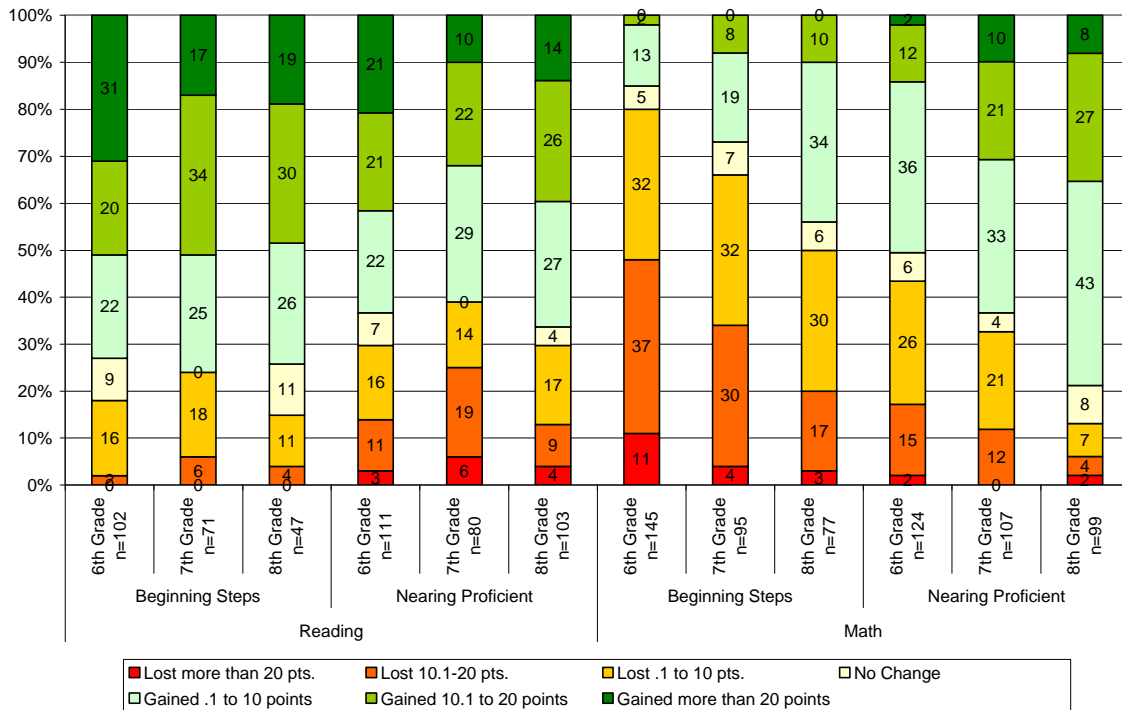


Figure 8 provides a more detailed observation of A2L gains and losses. As we did for summer elementary school, here we control for spring proficiency level and look at the change in scores. Examining reading first, we notice similar trends between grades within the same proficiency level. In elementary school, we had noticed that in all three grades, beginning step students improved their scores more than nearing proficient students in reading. Here the same tendency is evident, if less dramatic. Among beginning step students, for instance, the percentage of students who improved their scores by ten points or more is approximately half for all grades; whereas this percentage does not exceed 42% (6th grade) among nearing proficient students. Similarly, the percentage of beginning step students who lose ten or more points is at most 6% (7th grade), but among nearing proficient students the percentage varies from 13% to 25%. Whereas this trend was seen as positive in elementary school because the number of beginning step students exceeded the number of nearing proficient students, here the opposite is true. In all grades, there are more nearing proficient students than beginning step students.

Math provides a very different and interesting pattern. As is true in elementary school, the impact of spring proficiency level is exactly the opposite with math as it is in reading. That is, nearing proficient students gain more points than beginning steps students. The percentage of students gaining ten or more points is very low for beginning step students, ranging from 0% (6th grade) to just 10% (8th grade) but reasonable for nearing proficient students, from 14% (6th grade) to 35% (8th grade). Similarly, among beginning step students the percentage of students losing ten or more points is quite high, ranging from 20% (8th grade) to 48% (6th grade); and the percentage is low among nearing proficient students, from 6% (8th grade) to 17% (6th grade). Overall, as was true in elementary school, more students are nearing proficient than beginning

steps – but this is not the case for 6th grade; and in 7th and 8th grade the differences in the sizes of the proficiency groups are minor.

Figure 8: Gains and Losses in A2L Scores for Middle School Summer School Students



Another trend is quite obvious in math as well – for both nearing proficient and beginning steps students, improvement increases dramatically with grade level, as we also see in both Figures 7 and 8. Among beginning steps students, the percentage showing any positive change in scores increases from 15% among 6th graders, to 34% for 7th graders, to 44% for 8th graders. And among nearing proficient students, the percentage showing positive change increases from 50% among 6th graders, to 64% for 7th graders, to 78% for 8th graders.

Does summer school address the needs of some NCLB groups of students better than others?

We examine this question by looking in detail at changes in scores for 8th graders. Figure 9 shows average spring and summer reading A2L scores by NCLB sub-group; while Figure 10 shows the same for math. (Subgroups with less than 20 students are omitted).

In reading, while the tendency is not overwhelming, there seems to be some indication that Caucasians, non-ELL students, and non-FRLP students gain somewhat more points with summer school than Hispanics, ELL students, and FRLP students, respectively. In math, this tendency is not nearly as evident; gains seem to be fairly consistent across groups.

Figure 9: Average 8th Grade Reading A2L Scores cfor Summer School Students

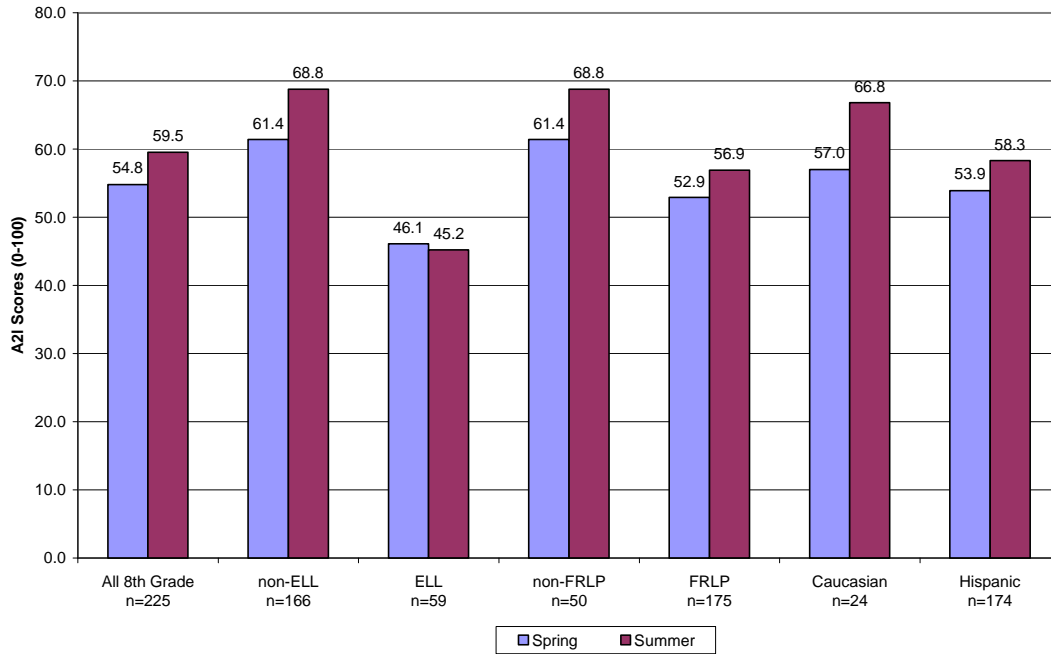
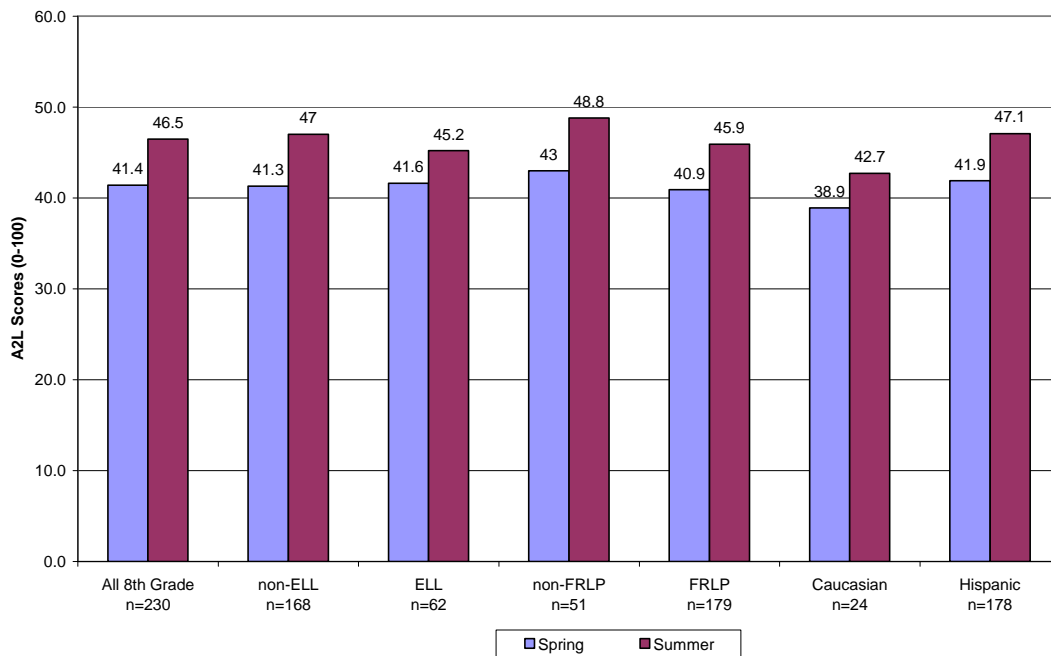


Figure 10: Average 8th Grade Math A2L Scores for Summer School Students



As we learned is true for summer elementary school, the differences in NCLB subgroups in reading may have more to do with different distributions of nearing proficient and beginning step

students in each of the subgroups. Figure 11 examines the change in scores controlling for spring proficiency level and NCLB subgroup. We already have seen that proficiency matters for changes in middle school reading scores – beginning step students improve more than nearing proficient students. These results indicate a similar, if not strong, pattern.

For 3rd graders in reading, we learned this was true no matter the NCLB subgroup. But in this case, another pattern appears to suggest subgroups may matter for 8th grade, at least in terms of ELL. As noted above in Figure 9, more non-ELL students made gains compared to ELL students, even now after controlling for spring proficiency level. Almost two-thirds (65%) of beginning steps non-ELL students gained ten or more points compared to just 37% of ELL beginning steps students. Among nearing proficient students, nearly half (48%) of non-ELL students gained ten or more points compared to just 8% of ELL students.

Figure 11: Gains and Losses in 8th Grade Reading A2L Scores from Spring to Summer

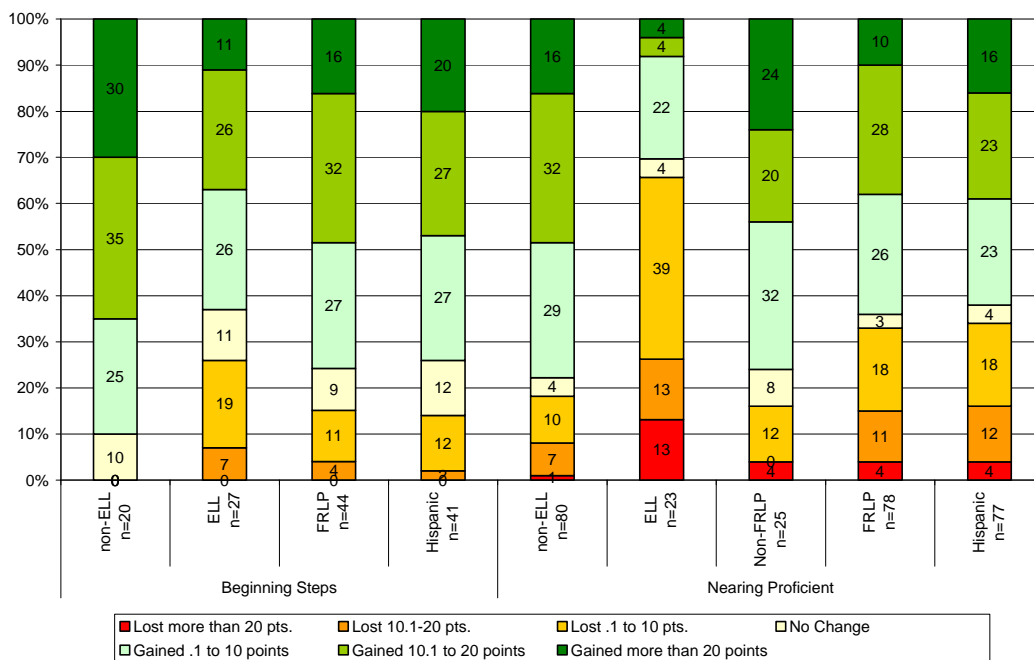
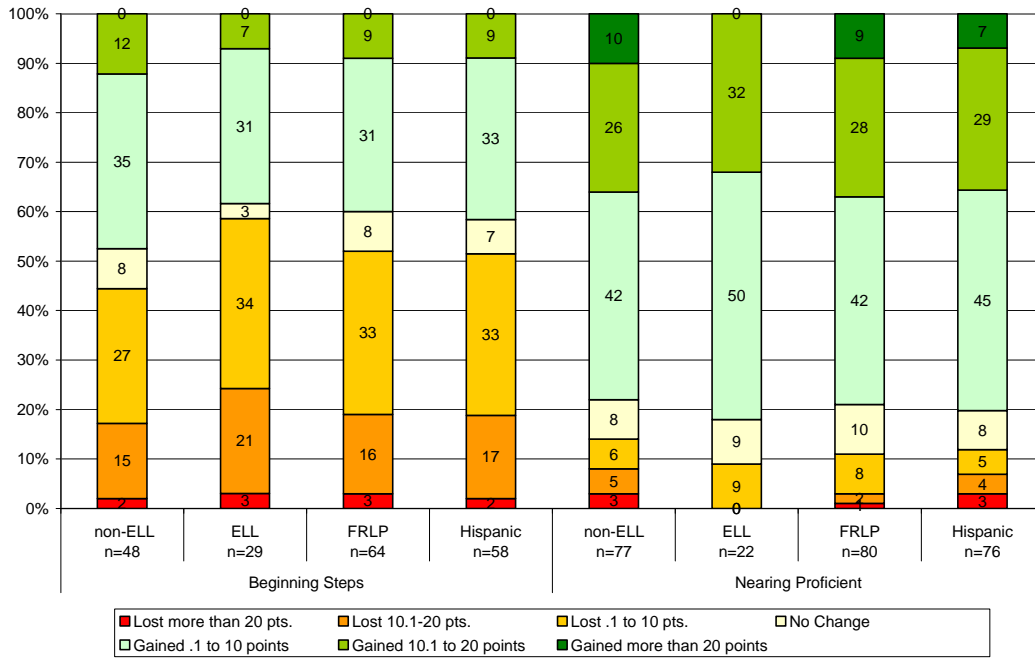


Figure 12 repeats this analysis for math. For elementary summer school, we saw that nearing proficient students made more gains than beginning step students no matter the NCLB subgroup. The same pattern emerges for middle school. No differences among NCLB subgroups are evident for 8th grade in math.

Figure 12: Gains and Losses in 8th Grade Math A2L Scores from Spring to Summer



In summary, summer school enrollment and completion rates are good. At 63%, the completion rate as a function of the total number of openings is about twice as high for middle school compared to elementary school. As was true for summer elementary school, more beginning step students make gains in reading compared to nearing proficient students, but fewer beginning step students make gains in math. NCLB subgroups in most cases is not found to impact the change in scores in 8th grade. However, among 8th graders, non-ELL students do make more gains in reading than ELL students.

III High School

For high school students, summer school offers both the opportunity for advancement (most commonly for P.E.) and credit recovery for classes students did not pass during the regular school year (most commonly for Algebra I).¹¹ APS students pay \$200 tuition for each ½ credit class.¹² The courses are also available to non-APS students with a \$50 surcharge. Each class lasts three weeks, four hours a day. Two terms are offered in most schools. A multitude of summer school high school courses are offered at six APS locations.

¹¹ Summer school is just one option CELSA offers or plans to offer at the high school level for alternative education opportunities. Other choices include 7th hour, night, inter-session, and on-line classes.

¹² APS students in the free lunch program pay \$50; students in the reduced lunch program pay \$100. A similar sliding fee is used for laboratory fees. CELSA is currently working to publicize these discounts, as many qualifying high school students choose not to apply for the FRPL program. Indian Education provides a waiver for one full credit and associated lab fees for Native American students.

CELSA determines course offerings based on previous years' enrollment, which has been fairly consistent in recent years. Courses with less than 20 students enrolling are usually dropped and students are enrolled in an alternate location. An important challenge for CELSA is recruiting high school locations for summer school; CELSA has a goal of making courses available in a wide geographic range. In some cases, high school courses are offered in middle school locations. This seems to be a reasonable solution; but it means CELSA has the added burden of obtaining and moving appropriate bookroom materials to serving middle schools.

Results

Is APS successful in filling and maintaining attendance for all available summer school slots?

Overall, attendance appears to be very good in high school. SchoolMax data suggest 2,127 students enrolled in 3,444 summer courses. The great majority, 93%, were completed with a passing grade. (About 4% earned a failing grade; 3% earned an 'Incomplete'.) Schools report slightly different outcomes. They report slightly higher figures: 3,483 course enrollments. Of these, 324 or 9% of course enrollments were dropped. Schools dropped students from all but ten of these course enrollments because of inadequate attendance (more than two absences.)

Do students make appreciable academic gains during summer school?

As reported above, students passed approximately 93% of summer school courses. Table 3 shows each summer school course with its grade outcomes. Nearly two thirds of the time (65%), courses are passed with an 'A' or a 'B.'

Table 3: High School Summer School Grades

Course	Enrolled students	Passed	Received A-F grade (not P/F)		
			Passed: A or B	Passed: C	Passed: D
Overall	3,444	93%	65%	20%	11%
English 9, 1st sem.	124	96%	65%	23%	8%
English 9, 2nd sem.	102	93%	62%	19%	19%
English 10, 1st sem.	59	98%	79%	14%	7%
English 10, 2nd sem.	63	90%	73%	18%	3%
English 11, 1st sem.	44	100%	80%	14%	7%
English 11, 2nd sem.	51	96%	69%	20%	8%
English 12, 1st sem.	38	100%	84%	16%	0%
English 12, 2nd sem.	42	98%	90%	5%	5%
Communication Skills, 1st sem.	10	100%	40%	50%	10%
Communcation Skills, 2nd sem.	12	100%	58%	25%	17%
Reading Expression	29	100%	n/a	n/a	n/a
Algebra Readiness, 1st sem.	45	84%	38%	0%	8%
Algebra Readiness, 2nd sem.	10	100%	70%	10%	20%
Algebraic Modeling, 1st sem.	47	98%	41%	35%	24%
Algebraic Modeling, 2nd sem.	57	96%	44%	31%	25%

Table 3 continued

Course	Enrolled students	Passed	Received A-F grade (not P/F)		
			Passed: A or B	Passed: C	Passed: D
Algebra I, 1st sem.	188	92%	48%	23%	22%
Algebra I, 2nd sem.	288	88%	43%	28%	21%
Algebra II, 1st sem.	53	100%	51%	36%	13%
Algebra II, 2nd sem.	74	96%	59%	27%	14%
Geometry, 1st sem.	141	93%	64%	22%	11%
Geometry, 2nd sem.	196	90%	60%	27%	9%
Biology I, 1st sem.	138	91%	48%	23%	21%
Biology I, 2nd sem.	146	86%	37%	26%	24%
Chemistry I, 1st sem.	113	98%	50%	41%	7%
Chemistry I, 2nd sem.	137	95%	49%	35%	15%
Physics I, 1st sem.	26	92%	75%	21%	4%
Physics I, 2nd sem.	25	92%	87%	13%	0%
US History, 1st sem.	51	84%	63%	22%	2%
US History, 2nd sem.	55	89%	69%	22%	6%
Western History, 1st sem.	88	86%	72%	24%	4%
Western History, 2nd sem.	104	88%	57%	25%	10%
Economics	84	83%	74%	9%	8%
Government	74	92%	88%	6%	4%
NM History	64	95%	78%	9%	8%
Spanish I, 1st sem.	13	62%	100%	0%	0%
Spanish I, 2nd sem.	11	100%	100%	0%	0%
P.E., 1st sem.	334	97%	93%	4%	0%
P.E., 2nd sem.	239	97%	98%	2%	0%
Health Education	69	88%	60%	26%	8%

CELSA also received information from schools that 87 of the approximately 99 12th grade students attending summer school (88%) received the credits necessary for graduation.

Does summer school address the needs of some NCLB groups of students better than others?

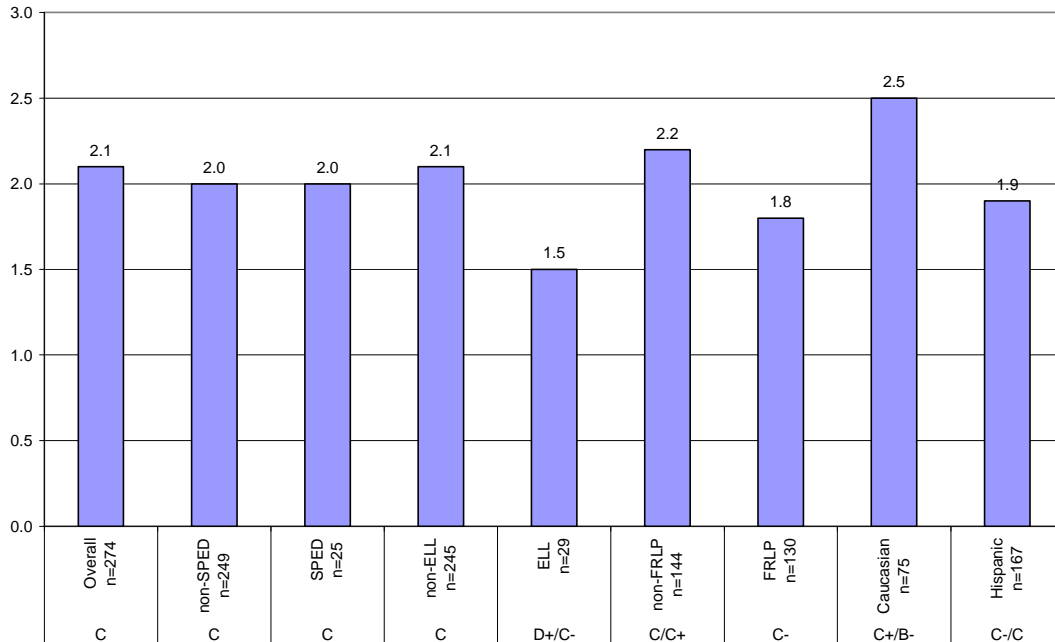
To answer this question, we look at the math, science and language arts classes with the highest attendance. These are 2nd semester Algebra I (288 students), 2nd semester Biology I (146 students), and 1st semester English 9 (124 students).

Figure 13 describes the average numeric and corresponding letter grade for 2nd semester Algebra I students by NCLB subgroups.¹³ (Subgroups with fewer than 20 students are omitted.) Overall, the average grade was a C. Subgroups varied but little. ELL students earned slightly lower grades than non-ELL students; FRLP students earned slightly lower grades than non-FRLP

¹³ Demographic information is unavailable for about 5% of students. These may be non-APS students or students who enrolled after the 160th day of the previous school year.

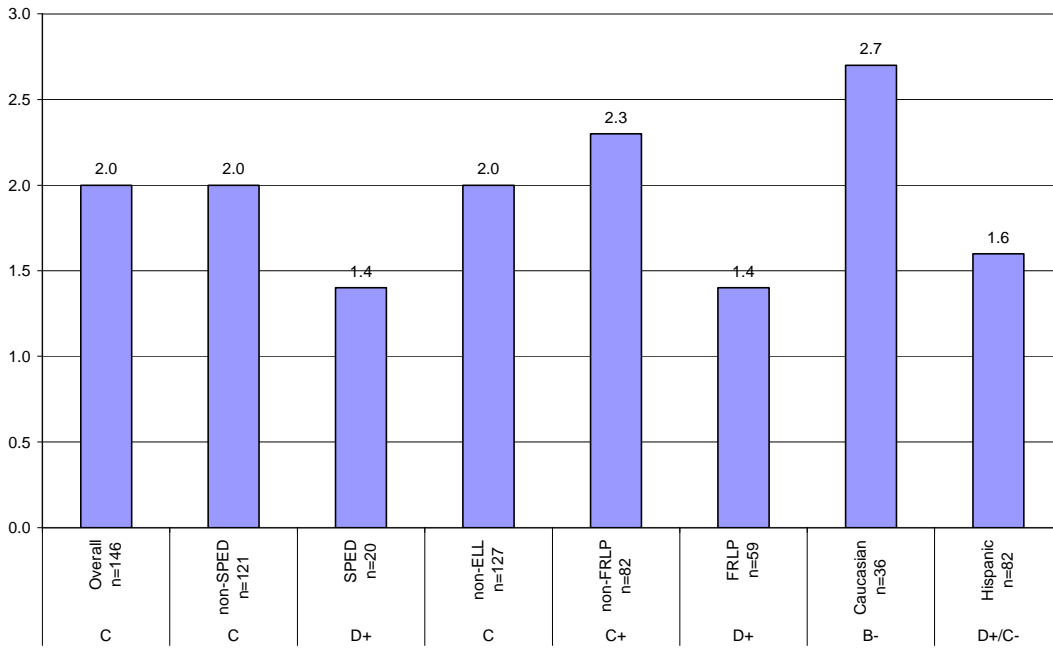
students; and Hispanics earned slightly lower grades than Caucasians, probably due to the correlation between ethnicity and ELL and FRLP status.

Figure 13: 2nd Semester Algebra I Average Grades



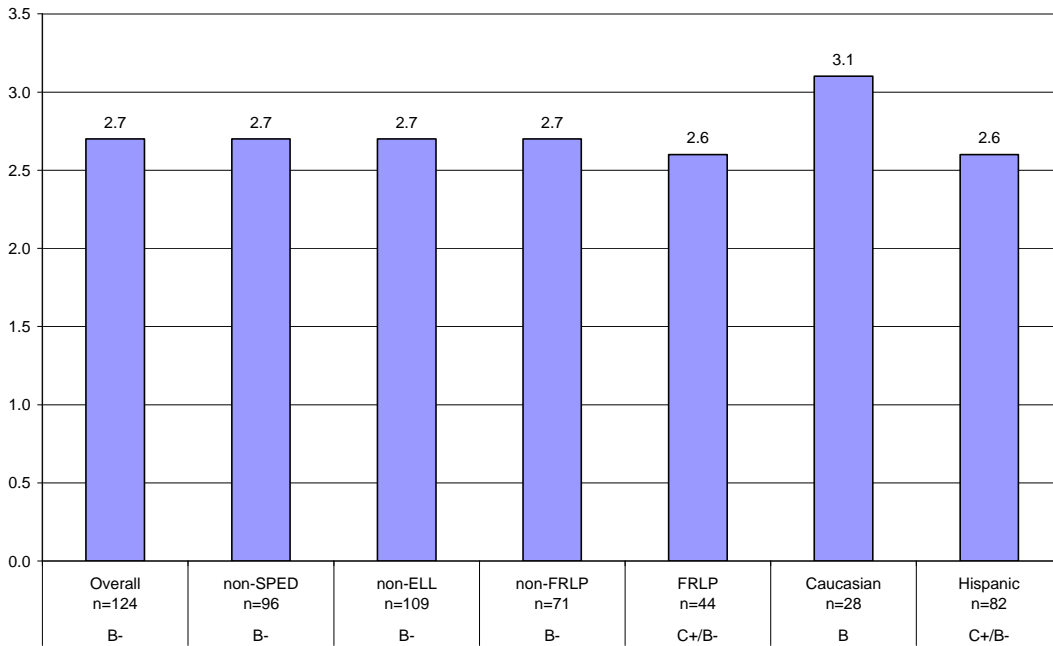
Similarly, Figure 14 describes the average numeric and corresponding letter grade for 2nd semester Biology I students by NCLB subgroups. Again, the average grade was a C. Differences between subgroups are more pronounced for Biology than Algebra. SPED students, FRLP students, and Hispanics earned lower grades than non-SPED students, non-FRLP students, and Caucasians, respectively, by at least half a grade point or more.

Figure 14: 2nd Semester Biology I Average Grades



Finally, Figure 15 describes the average numeric and corresponding letter grade for 1st semester English 9 students by NCLB subgroups. The average grade was a B-. Few differences by subgroup are evident, except a slightly better average grade (½ grade point) for Caucasians compared to Hispanics.

Figure 15: 1st Semester English 9 Average Grades



In summary, the summer school drop-out rate among high school students appears to be low, approximately 9%. Most courses are successfully completed with a passing grade, 93%; and most seniors taking summer school courses do earn the credits necessary to graduate. We examined differences in grades by NCLB categories for the three most popular academic courses. For Algebra I and English 9, differences are minimal. For Biology I, differences are a bit more evident, favoring non-SPED students, non-FRLP students, and Caucasians over SPED students, FRLP students, and Hispanics.

Limitations

It is important to keep in mind the limitations to any study. For this research, one of the most important limits is the outcome measure of effectiveness, A2L. As a benchmark or interim assessment, A2L is designed to provide summative information about a student’s progress over the full year’s curriculum; the breadth is wide and the depth is narrow. While A2L provides a convenient measure for a pre-test post-test design, since the assessment does not narrowly cover specific concepts addressed in the three to five weeks of summer school instruction, A2L may not be able to detect the full amount of learning that took place during summer school. In addition, A2L was most often administered about three-fourths of the way through summer school, rather than at the very end. Furthermore, students may not necessarily have been motivated to perform as well as they could on this assessment since it was not linked to any outcome for them. Thus, A2L may underestimate the impact of summer school.

Another limitation is the absence of ‘dosage’ information, or the amount of the intervention to which students are exposed. CELSA policy is that students with more than two unexcused absences were withdrawn from summer school. However, those with excused absences remained

in the program; and anecdotal evidence suggests that evidence suggests that some students with more than two unexcused absences remained in the program.

Finally, this study does not compare summer school attendees with similar students who did not attend summer school. This study therefore has a limited ability to make conclusions about the effectiveness of summer school.