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Student-Level Analysis of Year 4 (2006-07) Achievement Outcomes for Tennessee Secondary Charter Schools

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January 2008

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Executive Summary

This report presents student-level achievement results for Tennessee charter schools that serve students in middle and high school grades. The present achievement report supplements a report (Ross, McDonald, & Bol, 2008) on the implementation progress made by the charter schools, encompassing school climate, classroom teaching methods, and perceptions by teachers, principals, parents, and students.

Two schools began operation in 2003-04 -- Memphis Academy of Health Sciences (MAHS) and Memphis Academy of Science and Engineering (MASE); two were established in 2004-05 -- City University School of Liberal Arts (City U) and Yo! Academy; and three opened in 2005-06 -- The Soulsville Charter School (formerly Stax Music Academy), Memphis Business Academy (MBA), and KIPP Academy Nashville. These three cohorts were therefore completing their fourth, third, and second academic years respectively at the time the achievement tests were administered in the 2006-07 school year.

School Overview

A brief overview of each school is provided in the following table:

School	Cohort	Level	Grades (06-07)	Enrollment (06-07)	Location
Memphis Academy of Health Sciences (MAHS)	1	Middle	6-8	270	Memphis
Memphis Academy of Science & Engineering (MASE)	1	Secondary	6-10	560	Memphis
City University of School of Liberal Arts (CityU)	2	Secondary	9-11	240	Memphis
Yo! Academy for the Visual and Performing Arts	2	Secondary	9-12	160	Memphis
KIPP Academy Nashville	3	Middle	5-6	120	Nashville
Memphis Business Academy (MBA)	3	Middle	6-7	115	Memphis
Soulsville Charter School	3	Middle	6-7	120	Memphis

Methodology

To examine student achievement outcomes, we employed a matched program-control design at the student level at these schools. In this design, each charter school student was paired with a comparable “control” student who attended the same or a similar district school in the year prior to the former’s charter school enrollment.

Achievement Measures

The Tennessee Comprehensive Assessment Program: Achievement Test (TCAP/AT) Reading/Language Arts (Reading/LA) and Math number correct scores for students who were in grades 5 through 8 during the 2006-07 school year were used to assess academic achievement. For students in grades 9 and 10 during the 2006-07 school year, the Tennessee Gateway Algebra I and English 10 assessment number correct scores, respectively, were used as the outcome measures. According to the Tennessee High School Examinations Policy, the State Board requires that students successfully pass assessments in the following three subject areas in order to earn a regular high school diploma: Algebra I (usually completed in grade 9), English 10, and Biology (usually completed in 10th grade).

Summary and Conclusions

To summarize the achievement outcomes obtained in this study, a brief achievement profile of each of the schools is provided below. In general, only statistically significant differences are discussed. We encourage readers to interpret these results cautiously given that (a) due to student choice and other constraints, we were unable to conduct a randomized experimental study that eliminated family interest or involvement as an influential factor; and (b) some grade-level matched-pair sample sizes were small and thus subject to sampling error.

Second-Year Schools

KIPP Academy Nashville. KIPP students had significantly higher Math scores in both 5th and 6th grades.

Memphis Business Academy. A significantly higher percentage of MBA students scored Proficient or Advanced in 7th grade Math compared to controls.

The Soulsville Charter School. Soulsville students had significantly higher average scores than controls in 6th and 7th grade Math and 6th grade Reading/Language Arts. A significantly higher percentage of control students scored Proficient while a significantly higher percentage of Soulsville students scored Advanced in 6th grade Math.

Third-Year Schools

City University School of Liberal Arts. Algebra I and English 10 Gateway test scores were analyzed; no major effects or trends were found.

Yo! Academy. Significantly outperformed by controls in Algebra I; no effects or trends in English 10.

Fourth-Year Schools

Memphis Academy of Health Sciences. MAHS students had significantly better performance than controls in 6th and 8th grade Math (for students taking the regular 8th grade Math course), 7th and 8th grade Reading/Language Arts, and students scoring Proficient in 8th grade Algebra I. Control students had a significantly higher percentage scoring Advanced in 8th grade Algebra I.

Memphis Academy of Science and Engineering. Significant positive effects were found for MASE in 8th grade Reading/Language Arts (for those students also enrolled in Algebra I), students scoring Proficient in 8th grade Algebra I, and 10th grade English 10 performance. Control students had significantly better performance in 6th and 8th grade Math, 9th grade Algebra I, and students scoring Advanced in 8th grade Algebra I.

Student-Level Analysis of Year 4 (2006-07)
Achievement Outcomes for Tennessee Secondary Charter Schools

(Middle and High Schools)

This report presents student-level achievement results for Tennessee charter schools that serve students in middle and high school grade levels. The present achievement report supplements a report (Ross, McDonald, & Bol, 2008) on the implementation progress made by the charter schools, encompassing school climate, classroom teaching methods, and perceptions by teachers, principals, parents, and students.

Two schools began operation in 2003-04 -- Memphis Academy of Health Sciences (MAHS) and Memphis Academy of Science and Engineering (MASE); two were established in 2004-05 -- City University School of Liberal Arts (City U) and Yo! Academy; and three opened in 2005-06 -- The Soulsville Charter School (formerly Stax Music Academy), Memphis Business Academy (MBA), and KIPP Academy Nashville. These three cohorts were therefore completing their fourth, third, and second academic years respectively at the time the achievement tests were administered in the 2006-07 school year.

School Descriptions

Memphis Academy of Health Sciences (MAHS). MAHS served approximately 270 students in grades 6-8. All students were African American, with the majority (86%) eligible for free or reduced price lunch. The school employs 18 fulltime teachers, with a student to teacher ration of 15:1. An extended day (7:30 – 4:00) is utilized. The curriculum is a standards-based, interdisciplinary program that incorporates interdisciplinary projects and experiential learning centered on a health science theme. The school moved to another facility in 2006-2007, and now operates at Heritage Baptist Church in the Berclair community in northeast Memphis.

Memphis Academy of Science and Engineering (MASE). During 2006-2007, MASE was housed in two separate campuses, serving middle and high school students, respectively. A total of 560 students in grades 6 – 10 attended MASE. The students were predominantly African American (96%) The students were served by 29 fulltime teachers, a guidance counselor, a dean of students, assistant principal, and academic intervention officer. The student to fulltime teacher ratio was 19:1. The school day was 8:00 – 5:30.

City University School of Liberal Arts (CityU). CityU is located in a Baptist church in an urban area of Memphis. The school enrolled 311 students in grades 9 - 12. Most (93%) of the students were African American, and 62% were eligible for free or reduced price lunch. The school's faculty consisted of 15 fulltime teachers and two part-time teachers. The student to teacher ratio was 26:1. The curriculum developed and employed at CityU is a rigorous college preparatory program rooted in the Kolb Theory of experiential learning. Students attend school from 8:00 – 3:15, with 9th grade Academy students staying to 4:15 four days per week.

Yo! Academy for the Visual and Performing Arts. Yo! Academy of Visual and Performing Arts is located in southwest Memphis in an industrial warehouse site, a facility used as part of the Yo! Memphis youth opportunity program, originally funded by the U. S. Department of Labor. The school served 160 students in the ninth through twelfth grades. All students were African American and 92% were eligible for free or reduced price meals. The school maintained a staff of 10 fulltime teachers, two part-time teachers, and two paraprofessionals. The student to fulltime teacher ratio was 11:1. The mission of the school is to provide at-risk students with a safe environment to pursue rigorous academic preparation while incorporating the visual and performing arts. The school's program includes longer days with performing arts classes scheduled in the latter part of the day. The school day is from 8:00 – 2:45.

KIPP Academy Nashville. KIPP Academy is located in a high-poverty section of east Nashville in a previously abandoned building owned by the Metropolitan Nashville Public School System. The school served 120 students in grades 5-6. The school will eventually serve students through 8th grade, and thus, is included as a "secondary" school. Most (95%) of these students were African American and 85% were eligible for free or reduced price lunch. The school maintained a staff of seven fulltime teachers, two part-time teachers and one speech pathologist. The student to teacher ratio as reported by KIPP Academy was 17:1. The school was chartered as a Knowledge is Power Program (KIPP) and lists its characteristics and unique school features as "Work Hard," "Be Nice," and "Be Honest." The school is distinguished by several extensions to the typical school calendar: extended school hours; Saturday school held two weeks out of each month; and an extended school year with a four week summer program.

Memphis Business Academy (MBA). MBA is located in downtown Memphis. The school served 115 sixth and seventh grade students. Almost all (99%) were African American and 92% were eligible for free or reduced price lunch. The school employed eight ful-time teachers, one part-time teacher, and one paraprofessional. The student to teacher ratio was 19:1. The school incorporates business education, entrepreneurship and financial responsibilities into the core curriculum. The standard school day is from 7:30 – 3:15.

Soulsville Charter School. The Soulsville Charter School is located on the same property as the historic Stax Museum of American Soul Music, known as Soulsville, USA. The school served 120 students. All students were African American and 90% qualified for free or reduced price lunch. Seven fulltime teachers were employed, resulting in a student to teacher ratio of 20:1. The school incorporates a concentration on orchestra and musical skills development into the core curriculum developed by Memphis City Schools. The school's plan includes extended school days (8:00 – 5:00) and half-day Saturday classes.

Method

To examine student achievement outcomes, a matched program-control design at the student level was employed. In this design, each charter school student was paired with a comparable "control" student who attended the same or a similar district school in the year prior to the former's charter school enrollment. Given the different grade levels served and curricular objectives emphasized by the charter schools, the results for each were analyzed separately. Prior to the matching process, charter school students who fell into any of the following categories were dropped from the analysis:

1. Students who were not continuously enrolled at the school,[1]
2. Special education students,
3. ELL students,
4. Students who had been retained from the previous year, and
5. Students missing any of the following data:
    - 2006-07 or baseline[2] TCAP Achievement Test (TCAP/AT) Math/Gateway Algebra I or TCAP/AT Reading/Language Arts (Reading/LA)/Gateway English 10 subtests,
    - grade level,

[1] Defined as being enrolled at the school since the first 20-day attendance reporting period until the test administration. Schools are only held accountable under No Child Left Behind (NCLB) for making Adequate Yearly Progress (AYP) based on students who are defined as "continuously enrolled" at their particular school. This is also known as the student's "membership" status.

[2] With the exception of the 8th grade Algebra I analyses, baseline refers to the pre-charter school enrollment year. For example, if a charter school begins with sixth grade, the baseline year would be fifth grade. In the case of 8th grade Algebra I, the previous year's 7th grade (2005-06) TCAP/AT Math score was used.

- o test level,
- o lunch status,
- o special education status,
- o ELL status, or
- o membership status.

After dropping charter school students in the above categories, the remaining students were matched with comparable non-charter students in based on the following criteria:

1. Enrollment at the same traditional school that the charter school student had previously attended,

2. Baseline TCAP/AT Math Number Correct (+/-3) for the 2004-05 and 2005-06 years. Otherwise, TCAP/AT Math NCE (+/-5) was used for the 2001-02, 2002-03, and 2003-04 years,

3. Baseline TCAP/AT Reading/LA Number Correct (+/-3) for the 2004-05 and 2005-06 years. Otherwise, TCAP/AT Reading/LA NCE (+/-5) was used for the 2001-02, 2002-03, and 2003-04 year,

4. Gender,

5. Ethnicity,

6. Lunch status (Free lunch, Reduced lunch, and Full pay),

7. Grade level in 2006-07 and the baseline year,

8. Test level in 2006-07 and the baseline year,

9. Not a Special Education student,

10. Not an ELL student,

11. Not a retained student, and

12. Student was continuously enrolled.

There were three matching circumstances: (1) Charter and control students were matched satisfying all the above criteria, (2) charter and control students were matched satisfying all criteria except baseline location, and (3) charter and control students were matched satisfying all criteria except baseline location and lunch status. In the case of a lunch status discrepancy, only Free and Reduced Meal students were acceptable matches. For example, if a charter student was a full pay student and his/her matched controls were all free or reduced pay, then this charter student had no matched control student. If a charter student was “reduced”, and matched controls were “free”, then this charter student could be matched to one of those controls. Also, in order to choose the best available match within all students satisfying all possible criteria, priority was given to those students with the closest prior achievement score to that of the charter school student.

Group equivalence on achievement variables at baseline was confirmed with one-way ANOVAs for each subject area within each school sample. For the 2004-05 and 2005-06 school years, the TCAP/AT Math and Reading/LA number correct scores were used as the baseline. For a student to be matched as a control, she or he had to be within 3 points above or below the number correct score of the charter school student in both subjects. For the 2001-02, 2002-03, and 2003-04 school years, the TCAP/AT NCE score was used as the baseline. For a student to be matched as a control, she or he had to be within 5 NCEs above or below the NCE of the charter school student in both subjects. Number correct scores were used for 2004-05 and 2005-06 because the TCAP/AT was criterion-referenced for

those years, meaning only number correct scores were available. For 2003-04 and earlier, the TCAP/AT was primarily norm-referenced, meaning that scores available (e.g., NCE, percentile) reflected the student's relative standing compared to the norm group. Effect sizes[3] were calculated on these pre-program achievement scores to confirm the similarities between charter and control student groups. Correlations were also performed to test the relationship between baseline and outcome achievement scores.

Analysis of Covariance (ANCOVA) or Multivariate Analysis of Covariance (MANCOVA) was used to assess the impact of charter school membership on 2006-07 student Math and/or Reading/LA achievement scores, with students' baseline achievement score(s) used as the covariate(s). Effect sizes were calculated for both unadjusted and adjusted mean differences within each subject area within each school sample.

For the Gateway Algebra I and English 10 analyses, results from both the December 2006 and May 2007 administrations were available. If a student took the test at both times, the higher score was used. Finally, chi-square analyses were conducted to compare proficiency levels attained by charter and control students by subject area in two ways: Percent at Below Proficient, Proficient, Advanced (3 levels), and also by collapsing the Proficient and Advanced categories to look at proficiency by pass/fail status (2 levels).

Achievement Measures

Assessments of academic achievement utilized the spring 2007 TCAP/AT Reading/LA and Math number correct scores for students in grades 3 through 8. The TCAP/AT is administered each spring to students in grades 2 to 8 in all Memphis City Schools (MCS) and to students in grades 3 through 8 state-wide (including Nashville Metro).

The 2006-07 TCAP/AT in grades 3 through 8 is a criterion-referenced, multiple-choice measure that indicates student proficiency based on minimum passing scores. To be defined as Proficient, a student must demonstrate "general understanding of the essential concepts and skills of the content area." To be defined as Advanced, a student must demonstrate "application of complex concepts and skills of the content area." Students scoring below the minimum required for proficiency are considered Below Proficient. This lowest level is defined as demonstrating "a lack of understanding of the essential concepts and skills of the content area" (State of Tennessee Department of Education, 2004, p. 15). The number of questions that must be answered correctly in order to score Proficient or Advanced differs by year of administration, subject, and grade level, as summarized below.

[3] Effect sizes were computed by a formula called "Cohen's d." Each effect size (or d) indicates the number of standard deviations by which the charter school student mean differs from the control student mean. Thus, an effect size of say, +0.50, would indicate a half of a standard deviation advantage—a highly substantial educational impact. Generally, in education, effect sizes exceeding +0.20 would be considered meaningful and fairly strong when obtained for a whole-school intervention. In all cases, Cohen's *d* effect size was computed as the mean difference (treatment – control) divided by the pooled standard deviation.

Number Correct Cut Scores					
		Spring 2006[1]		Spring 2007[2]	
Content Area	Grade	Proficient	Advanced	Proficient	Advanced
Reading / Language Arts	3	24	45	26	50
	4	26	46	33	53
	5	22	43	22	47
	6	24	44	26	50
	7	23	42	25	48
	8	23	41	24	46
Mathematics	3	34	50	37	56
	4	31	48	33	53
	5	25	44	27	47
	6	25	45	28	49
	7	24	45	28	51
	8	24	45	25	48

[1] There were 70 questions for both Reading/LA and Math in 2006.
[2] There were 77 questions for both Reading/LA and Math in 2007.

For students in grades 9 and 10 during the 2006-07 school year, the Tennessee Gateway Algebra I and English 10 assessment number correct scores were used as outcome measures. According to the Tennessee High School Examinations Policy, the State Board requires that students successfully pass assessments in the following three subject areas in order to earn a regular high school diploma: Algebra I (usually completed in grade 9), English 10, and Biology (usually completed in 10th grade).

The Gateway Assessments are criterion-referenced, multiple-choice measures that indicate student proficiency based on minimum passing scores for designation as Proficient or Advanced. Proficient "means the student responded correctly to enough questions to meet the minimum requirements in the content area." An Advanced level of proficiency "means the student responded correctly to enough questions to show mastery higher than the minimum requirement." Students scoring below the minimum required for proficiency are considered Below Proficient. This lowest level "means that the student did not answer enough questions correctly to satisfy the requirements of the State of Tennessee. Students scoring Below Proficient may need additional instructional support, which could be in the form of Intervention" (State of Tennessee Department of Education, 2005, p. 3).

While each Gateway exam always consists of 55 questions, the number of items that must be answered correctly in order to score Proficient or Advanced differs by subject area and by the date the test was administered. The minimum passing scores for the Algebra I and English 10 Gateway administrations for the 2006-07 school year are summarized below.

	Algebra I				English 10			
	Proficient		Advanced		Proficient		Advanced	
Test Date	# Items	%	# Items	%	# Items	%	# Items	%
December 2006	30	54.5	41	74.5	24	43.6	40	72.7
May 2007	30	54.5	41	74.5	25	45.5	39	70.9

Note. There were 55 questions on both tests.

Students first attempt the Gateway assessments while enrolled in the corresponding course. Should a student fail the Gateway test on this initial attempt, additional opportunities to take the assessment are provided in the summer following course completion. Students may also retake the Gateway exam during one of three testing periods offered during each subsequent school year. The test dates included for the current analyses were December 2006 and May 2007. If a student took the test on more than one administration, the highest score was used in the present analysis.

Results

Second Year Schools

KIPP Academy Nashville

5th Grade. There were 58 KIPP students available in 5th grade. Eleven of these were dropped: 7 were not continuously enrolled, and 4 were special education students. Forty-seven KIPP students were matched with controls. Of these 47 matched pairs, 14 were matched on all criteria, 31 were matched on all criteria except baseline location, 1 was matched with a discrepancy on baseline location and lunch status (KIPP: reduced meal; Control: free meal), and 1 was matched with a discrepancy on lunch status only (KIPP: reduced meal; Control: free meal). Therefore, 47 KIPP students in 5th grade and their matched controls were selected for analysis.

Utilizing the number of items answered correctly in 4th grade Math and Reading/LA from the 2005-06 TCAP/AT, one-way ANOVA verified the quality of the matching process in both subject areas (Math: $F=0.00$, $p=0.977$; Reading/LA: $F=0.02$, $p=0.880$), with effect sizes for both groups close to zero. The means for both groups was above the level needed to score Proficient (see Table 1).

Posttest outcomes for 5th grade. Correlations between baseline and outcome achievement scores were strong (Math: $r=0.832$, $p<.001$; Reading/LA: $r=0.759$, $p<.001$). MANCOVA indicated a significant effect for charter school membership (Wilks' Lambda=0.888, $F(2,89)=5.61$, $p=0.005$), with tests of group effects showing a significant impact in Math ($F(1,90)=11.09$, $p=0.001$), but no significant difference in Reading/LA ($F(1,90)=3.51$, $p=0.064$). Adjusted effect sizes for Math and Reading/LA were 0.698 and 0.390 respectively, reflecting a strong program effect in Math and a moderate program effect in Reading/LA. KIPP students answered a larger percentage of questions correctly in both subjects compared to controls (Math: 50.95% vs. 45.60%; Reading/LA: 49.22% vs. 45.71%) (see Table 2). It is important to reiterate that only the difference in Math was statistically significantly different.

Using three proficiency levels, the chi-square test showed no significant difference in performance between KIPP and control students for either Math ($\chi2(2)=1.791$, $p=0.408$) or Reading/LA ($\chi2(2)=1.182$, $p=0.554$). Although examining differences in the three levels of performance (Below Proficient, Proficient, and Advanced) can show more detailed changes in student performance, it is also meaningful to consider whether there are increases in the overall proportion of students meeting basic proficiency. For example, a school may not have made statistically significant changes in the number/percent of students moving from one specific level to the other (e.g., Proficient to Advanced), but may have made significant changes in the number/percent moving from not being proficient to proficient, which is an important accountability issue under No Child Left Behind. Using two proficiency levels, the chi-square test also indicated no significant difference in either subject (Math: $\chi2(1)=0.646$, $p=0.421$; Reading/LA: $\chi2(1)=1.044$, $p=0.307$). From a descriptive perspective (i.e., not statistically significant differences), KIPP (85.1%) had a larger percentage of students score Proficient or Advanced in Math compared to controls (78.7%), while KIPP equaled the performance of the district (85.1%), and was outscored by the state (92.6%). In Reading/LA, KIPP (97.9%) also had a larger percentage of students score Proficient or Advanced than controls (93.6%), and also did better than both the system (89.3%) and the state (95.1%) (see Table 3).

6th Grade. Fifty-four KIPP students in 6th grade were available. Of these, 13 were dropped due to the following reasons: 1 was not continuously enrolled, 10 were special education students, and 2 were missing the 2004-05 test data. As a result, 41 KIPP students were matched with controls: 18 pairs were matched satisfying all criteria, and 23 were matched on all criteria except baseline location. Six KIPP students were in Cohort 1 (first year of attendance at KIPP) and 35 were in Cohort 2 (second year of attendance at KIPP). As the number of students in Cohort 1 was low, the analysis was conducted on all 41 matched pairs without regard to cohort.

Utilizing the number of items answered correctly in 4th grade Math and Reading/LA from the 2004-05 TCAP/AT, one-way ANOVA supported the equality of the groups at the baseline (Math: $F=0.01$,

p=0.923; Reading/LA: F=0.07, p=0.799), with effect sizes for both groups near zero. The mean number correct for both groups was above the level needed to score Proficient (see Table 1).

Posttest outcomes for 6th grade. Correlations between baseline and outcome achievement scores were moderate to strong (Math: r=0.694, p<.001; Reading/LA: r=0.834, p<.001). MANCOVA indicated a significant effect for charter school membership (Wilks' Lambda=0.858, F(2,77)=6.36, p=0.003), with tests of group effects indicating a significant difference in Math (F(1,78)=12.74, p=0.001), with KIPP students scoring significantly higher than controls. There was no significant effect in Reading/LA (F(1,78)=2.98, p=0.088). Adjusted effect sizes for Math and Reading/LA were 0.798 and 0.386 respectively, reflecting strong program effects in Math and a moderate effect in Reading/LA in favor of KIPP (with only the difference in Math being statistically reliable). In both subjects, KIPP students answered a larger percentage of questions correctly compared to controls, particularly in Math (Math: 54.94% vs. 48.05%; Reading/LA: 53.81% vs. 50.57% respectively) (see Table 2).

As seen in Table 3, the chi-square test revealed no significant differences between KIPP and control students in proficiency for either Math or Reading/LA (Math: $\chi 2(2)=2.129$, p=0.345; Reading/LA: $\chi 2(2)=0.480$, p=0.787). When two levels of proficiency were considered, there was also no significant difference in proficiency for either subject (Math: $\chi 2(1)=0.554$, p=0.457; Reading/LA: $\chi 2(1)=0.456$, p=0.500). KIPP overall (92.7%) had a larger percentage of students score Proficient or Advanced in Math compared to controls (87.8%), the system (79%), and the state (89%). In Reading/LA, 90.2% of KIPP students scored Proficient or Advanced compared to 85.4% of controls, with both groups above the system (85%), and below the state (91.8%).

Summary of Results. Charter school membership had a significant effect in Math for students in both 5th and 6th grades, with large adjusted effect sizes (5th: Adj. d=0.698; 6th: Adj. d=0.798) that favored KIPP students. The mean number correct for KIPP students was higher than controls in both Math and Reading/LA for both grade levels. KIPP students in both grades also had a larger percentage of students score Proficient or Advanced in Math and Reading/LA compared to controls. It is important to note, however, that despite the directional advantages in favor of the KIPP students only the Math results were statistically significantly different.

The Soulsville Charter School (Soulsville)

6th Grade. Of 57 6th grade Soulsville students available for analysis, 17 were dropped due to the following reasons: 2 were special education students, 4 had been retained from the previous year, 9 were not continuously enrolled, and 2 were missing all data for the 2005-06 (baseline) year. Thus, 40 students were available for matching. Of these, 20 were matched with comparable students in non-charter schools on all criteria and another 20 were matched with controls on all criteria except baseline location. As a result, 40 students and their matched controls were selected for analysis.

Utilizing the number of items answered correctly in 5th grade Math and Reading/LA from the 2005-06 TCAP/AT, one-way ANOVA confirmed the adequacy of the matching process in both Math and Reading/LA (Math: F=0.05, p=0.828; Reading/LA: F=0.00, p=0.954), with effect sizes for both groups approximating zero. The mean number correct for Soulsville and control students was above the number needed to score Proficient in both subjects (see Table 1). Correlations between achievement scores pre- to post-charter school attendance were moderate to strong, with r=0.603 (p<.001) for Math and r=0.792 (p<.001) for Reading/LA.

Posttest outcomes for 6th grade. MANCOVA indicated a significant effect for charter school membership (Wilks' Lambda=0.901, F(2,75)=4.10, p=0.020), with follow up ANCOVAs indicating significant effects in both Math (F(1,76)=7.59, p=0.007) and Reading/LA (F(1,76)=3.99, p=0.049) in favor of Soulsville students. Adjusted effect sizes for Math and Reading/LA were 0.623 and 0.452 respectively, thereby reflecting strong program effects in both subjects, where Soulsville students answered a larger percentage of questions correctly compared to controls (Math: 58% vs. 51.48%; Reading/LA: 58.12% vs. 54.19% respectively) (see Table 2).

TCAP/AT proficiency levels. The chi-square test to examine the percentage of Soulsville and control students who scored at Below Proficient, Proficient, and Advanced levels on the spring 2007 CRT Math and Reading/LA subtests showed that student proficiency in Math was significantly different between Soulsville and controls ($\chi 2(2)=10.661$, $p=0.005$), while no significant difference was found in Reading/LA ($\chi 2(2)=3.662$, $p=0.160$). There were fewer Soulsville students (40%) and more control students (75%) than expected at the Proficient level. However, there were more Soulsville students (45%) and fewer control students (15%) than expected at the Advanced level (see Table 3).

Using only two performance levels (pass/fail), the chi-square test indicated no significant difference in either Math ($\chi 2(1)=0.457$, $p=0.499$) or Reading/LA ($\chi 2(1)=0.213$, $p=0.644$). Controls (90%) had a larger percentage of students score Proficient or Advanced in Math compared to Soulsville (85%) (see Table 3). Both groups did better than the district (81%), but only controls outperformed the state (89%). In Reading/LA, Soulsville (95%) had a larger percentage of students score Proficient or Advanced compared to controls (92.5%), the district (84.9%), and the state (91.8%).

7th Grade. Of 58 7th grade Soulsville students available for analysis, 12 were dropped prior to the matching process. Of these, 2 were special education students, 4 were not continuously enrolled, 5 were missing 2004-05 data, and 1 had been retained from the previous year. Therefore, 46 students were available for matching, of which 16 were matched with controls on all criteria, 29 were matched to controls on all criteria except baseline location, and 1 was matched to a control with a discrepancy on both baseline location and lunch status (the Soulsville student had reduced lunch while the control student had free lunch). Out of the 46 students selected for analysis, 11 had been at Soulsville for one year (Cohort 1), and 35 had been at the school for two years (Cohort 2).

Utilizing the number of items answered correctly in 5th grade Math and Reading/LA from the 2004-05 TCAP/AT, one-way ANOVA confirmed the similarity of matched Soulsville and control students (Cohort 1: Math ($F=0.04$, $p=0.842$); Reading/LA ($F=0.03$, $p=0.858$); Cohort 2: Math ($F=0.05$, $p=0.829$); Reading/LA ($F=0.01$, $p=0.910$); Combined Cohorts (Cohorts 1 and 2 together): Math ($F=0.09$, $p=0.769$); Reading/LA ($F=0.00$, $p=0.975$)), with effect sizes for both groups approximating zero. The mean number correct in both subjects for Soulsville and control students was above the number needed to score Proficient (see Table 1).

Correlations between baseline and outcome achievement scores were moderate to strong: Cohort 1: Math ($r=0.863$, $p<.001$); Reading/LA ($r=0.863$, $p<.001$); Cohort 2: Math ($r=0.616$, $p<.001$); Reading/LA ($r=0.687$, $p<.001$); Combined Cohorts: Math ($r=0.685$, $p<.001$); Reading/LA ($r=0.712$, $p<.001$)).

Posttest outcomes for 7th grade. MANCOVA indicated that there was a significant multivariate effect for charter school membership (Wilks' Lambda=0.907, $F(2,85)=4.34$, $p=0.016$). Cohort did not have a significant effect on student achievement scores (Wilks' Lambda=0.972, $F(2,85)=1.23$, $p=0.299$). There was also no effect for the interaction of charter membership and cohort (Wilks' Lambda=0.987, $F(2,85)=0.55$, $p=0.578$), meaning that results were similar for the two cohorts of students. Tests of group effects indicated that Soulsville students had significantly higher scores in Math than controls ($F=8.78$, $p=0.004$), while there was no group difference in Reading/LA ($F=3.14$, $p=0.080$). Adjusted effect sizes for the combined cohorts in Math and Reading/LA were 0.623 and 0.374 respectively, reflecting fairly strong program effects in both subjects, particularly in Math. In both Math and Reading/LA, Soulsville students answered a larger percentage of questions correctly compared to controls (Math: 60.58% vs. 52.77%; Reading/LA: 51.12% vs. 46.97% respectively) (see Table 2).

TCAP/AT proficiency levels. The chi-square test to examine the percentage of Soulsville and control students who scored at Below Proficient, Proficient, and Advanced levels on the spring 2007 CRT Math and Reading/LA subtests revealed no significant differences in proficiency between the groups in either subject (Cohort 1: Math ($\chi 2(2)=1.952$, $p=0.377$); Reading/LA ($\chi 2(2)=0.000$, $p=1.000$); Cohort 2: Math ($\chi 2(2)=1.630$, $p=0.443$); Reading/LA ($\chi 2(2)=1.984$, $p=0.371$); Combined Cohorts: Math ($\chi 2(2)=3.226$, $p=0.199$); Reading/LA ($\chi 2(2)=1.143$, $p=0.565$)). There were also no significant differences in proficiency by group in either Math or Reading/LA when two levels of proficiency were considered

(Cohort 1: Math ($\chi2(1)=0.386$, $p=0.534$); Reading/LA ($\chi2(1)=0.000$, $p=1.000$); Cohort 2: Math ($\chi2(1)=0.159$, $p=0.690$); Reading/LA ($\chi2(1)=1.939$, $p=0.164$; Combined Cohorts: Math ($\chi2(1)=0.449$, $p=0.503$); Reading/LA ($\chi2(1)=1.108$, $p=0.292$)) (see Table 3). For the combined cohorts, Soulsville (91.3%) had a larger percentage of students score Proficient or Advanced in Math compared to controls (87%), the district (77.9%), and the state (88.4%). In Reading/LA, Soulsville (93.5%) also had a larger percentage of students score Proficient or Advanced compared to controls (87%), the district (81.1%), and the state (89.8%).

Summary of Results. Soulsville had greater impact in 6th grade, where students outscored controls in both Math and Reading/LA, and had a greater percentage of students score Advanced in Math. Soulsville students outscored controls in 7th grade Math as well.

Memphis Business Academy (MBA)

6th Grade. Of 34 6th grade MBA students available for analysis, 16 were dropped. Of these, 3 were special education students, 12 were not continuously enrolled, and 1 had been retained from the previous year. Thus, 18 students were available for matching. Of these, 8 were matched with comparable students in non-charter schools on all criteria, 9 were matched with controls on all criteria except baseline location, and 1 did not have a matched control. As a result, 17 MBA students and their matched controls were selected for analysis.

Utilizing the number of items answered correctly in 5th grade Math and Reading/LA from the 2005-06 TCAP/AT, one-way ANOVA confirmed the similarity of the matched groups (Math: $F=0.00$, $p=0.947$; Reading/LA: $F=0.01$, $p=0.929$), with effect sizes close to zero. The mean number correct for MBA and control students in both subject areas was above the number needed to score Proficient (see Table 1). Correlations between baseline and outcome achievement scores were moderate to strong (Math: $r=0.719$, $p<.001$; Reading/LA: $r=0.683$, $p<.001$).

Posttest outcomes for 6th grade. MANCOVA indicated no significant effect for charter school membership (Wilks' Lambda=0.991, $F(2,29)=0.14$, $p=0.873$). Adjusted effect sizes for Math and Reading/LA were 0.149 and -0.086 respectively, reflecting little program effect in either subject. MBA students answered a larger percentage of questions correctly in Math compared to controls (53.13% vs. 51.91%), but a slightly smaller percentage of questions correctly in Reading/LA (52.03% vs. 52.70%) (see Table 2).

TCAP/AT proficiency levels. Using three proficiency levels, the chi-square test showed no significant difference in performance between MBA and control students for either Math ($\chi2(2)=5.167$, $p=0.076$) or Reading/LA ($\chi2(2)=2.154$, $p=0.341$). Using two proficiency levels, the chi-square test also indicated no significant difference in either subject (Math: $\chi2(1)=1.133$, $p=0.287$; Reading/LA: $\chi2(1)=2.125$, $p=0.145$) (see Table 3). MBA (82.4%) had a smaller percentage of students score Proficient or Advanced in Math compared to controls (94.1%) and the state (89%), while they outscored the district (81%). In Reading/LA, 100% of controls scored Proficient or Advanced compared to 88.2% for MBA. While MBA had a larger percentage score Proficient or Advanced compared to the district (84.9%), they did not match the performance of the state (91.8%).

7th Grade. Of 68 7th grade MBA students available for analysis, 23 were dropped prior to the matching process. Of these, 3 were special education students, 15 were not continuously enrolled, 3 were missing the 2004-05 data, 1 was missing grade level data for the 2005-06 year, and 1 was missing both the 2004-05 and 2005-06 data. Thus, 45 MBA students were available for matching, of which 23 were matched with controls on all criteria, and 22 were matched to controls with a discrepancy on baseline location only. Out of the 45 students selected for analysis, 19 had been at MBA for one year (Cohort 1), and 26 had been at the school for two years (Cohort 2).

One-way ANOVA confirmed the adequacy of the matched pairs using the number of items answered correctly in 5th grade Math and Reading/LA from the 2004-05 TCAP/AT (Cohort 1: Math ($F=0.02$, $p=0.894$); Reading/LA ($F=0.02$, $p=0.900$); Cohort 2: Math ($F=0.06$, $p=0.809$); Reading/LA

(F=0.03, p=0.866); Combined Cohorts: Math (F=0.07, p=0.791); Reading/LA (F=0.05, p=0.831)), with effect sizes for both groups approximating zero. The mean number correct in Math and Reading/LA for both MBA and control students was above the number needed to score Proficient (see Table 1).

Correlations between baseline and outcome achievement scores were moderate to strong Cohort 1: Math (r=0.850, p<.001); Reading/LA (r=0.774, p<.001); Cohort 2: Math (r=0.664, p<.001); Reading/LA (r=0.616, p<.001); Combined Cohorts: Math (r=0.760, p<.001); Reading/LA (r=0.677, p<.001)).

Posttest outcomes for 7th grade. MANCOVA indicated no significant effect for either charter school membership (Wilks' Lambda=0.962, F(2,83)=1.64, p=0.200), cohort (Wilks' Lambda=0.980, F(2,83)=0.83, p=0.440), or the interaction of charter membership and cohort (Wilks' Lambda=0.974, F(2,83)=1.11, p=0.334). Adjusted effect sizes for the combined cohorts in Math and Reading/LA were 0.384 and 0.104 respectively, reflecting a relatively stronger performance in Math in favor of MBA students. In both Math and Reading/LA, MBA students answered a larger percentage of questions correctly compared to controls (Math: 57.47% vs. 54.09%; Reading/LA: 51.42% vs. 50.45% respectively) (see Table 2).

TCAP/AT proficiency levels. The chi-square test utilizing three achievement levels revealed no significant differences in either Math or Reading/LA proficiency between MBA and control students (Cohort 1: Math ($\chi2(2)=2.181$, p=0.336); Reading/LA ($\chi2(2)=1.091$, p=0.580); Cohort 2: Math ($\chi2(2)=3.559$, p=0.169); Reading/LA ($\chi2(2)=0.227$, p=0.893); Combined Cohorts: Math ($\chi2(2)=5.006$, p=0.082); Reading/LA ($\chi2(2)=0.730$, p=0.694)). There was also no significant difference in proficiency between groups in either subject when two levels of proficiency were considered for Cohorts 1 and 2 separately (Cohort 1: Math ($\chi2(1)=2.073$, p=0.150); Reading/LA ($\chi2(1)=1.027$, p=0.311); Cohort 2: Math ($\chi2(1)=3.184$, p=0.074); Reading/LA ($\chi2(1)=0.221$, p=0.638) (see Table 3). However, a significant difference was found in Math for the combined cohorts (i.e., both Cohorts 1 and 2 together) ($\chi2(1)=4.939$, p=0.026) with a larger percentage of MBA students (97.8%) scoring at the Proficient and Advanced levels compared to controls (84.4%), the district (77.9%), and the state (88.4%). While no significance was found in Reading/LA ($\chi2(1)=0.714$, p=0.398), MBA (95.6%) outperformed controls (91.1%), the district (81.1%), and the state (89.8%).

Summary of Results. MBA had a significantly greater percentage of students score Proficient or Advanced in 7th grade Math for Cohorts 1 and 2 combined. There were no significant differences between MBA and controls in 6th grade performance.

Third Year Schools

City University School of Liberal Arts (City U)

9th Grade. Of 69 City U 9th grade students available, 20 were dropped due to the following reasons: 5 were not continuously enrolled, 3 were special education students, 5 were ELL students, and 7 were missing 2005-06 data. Therefore, 49 City U students were available for matching. Of these, 21 were matched with comparable students in non-charter schools on all criteria and another 25 were matched with controls with a discrepancy only on baseline location. Two students were matched to controls with discrepancies on both baseline location and lunch status (City U: reduced meal; Control: free meal). One City U student did not have a matched control available. As a result, 48 City U students and their matched controls were selected for analysis. There were only eighteen tenth graders and nine eleventh graders at City U taking Algebra I in the 2006-07 year. Due to the small sample sizes, separate grade level analyses were not conducted, and these students were excluded from the analysis.

Baseline comparison used the number of items answered correctly in 8th grade Math from the 2005-06 TCAP/AT. One-way ANOVA confirmed the similarity of the matches (F=0.00, p=0.991), with nearly a zero effect size. The mean number correct for both City U and control students in Math and Reading/LA was above the number needed to score Proficient (see Table 1). Correlations between baseline and outcome achievement scores was moderately strong, with r=0.746 (p<.001).

Posttest outcomes for 9th grade Gateway Algebra I. ANCOVA indicated no significant effect in Algebra I for charter school membership ($F(1,93)=1.39$, $p=0.242$). The adjusted effect size was -0.241, reflecting no charter school membership effect in Algebra I. City U students answered a smaller percentage of questions correctly compared to controls (60.55% vs. 62.71% respectively) (see Table 2).

Gateway Algebra I proficiency levels. The chi-square test indicated no significant difference in student proficiency between City U and control students in Algebra I using either three or two proficiency levels (3 proficiency levels: $\chi2(2)=5.620$, $p=0.060$; 2 proficiency levels: $\chi2(1)=0.807$, $p=0.369$) (see Table 3). Three quarters (75%) of City U students scored Proficient or Advanced in Algebra I compared to two-thirds of controls (66.7%), with both groups doing better than the district (65.2%), and worse than the state (86.3%).

10th Grade. There were 73 City U students available in 10th grade. Twenty-three students were dropped prior to the matching process. Of these, 12 were not continuously enrolled, 3 were ELL students, and 8 were missing 2004-05 data. Consequently, 50 students were available for matching. Of these, 38 City U students were matched to controls on all criteria. Eleven were matched to controls with a discrepancy on baseline location only. One student was matched to a control with discrepancies on both baseline location and lunch status (City U: reduced meal; Control: free meal). Out of the 50 City U students selected for analysis, 14 were in Cohort 1 and 36 were in Cohort 2.

Baseline comparison utilized the number of items answered correctly in 8th grade Reading/LA from the 2004-05 TCAP/AT. One-way ANOVA supported the equality of the groups at the baseline (Cohort 1: $F=0.01$, $p=0.936$; Cohort 2: $F=0.01$, $p=0.937$; Combined Cohorts: $F=0.01$, $p=0.913$), with effect sizes for all groups approximating zero. The mean number correct in Math and Reading/LA for both City U and control students was above that needed to score Proficient (see Table 1). Correlations between baseline and outcome achievement scores were moderate to strong (Cohort 1: $r=0.644$, $p<.001$; Cohort 2: $r=0.736$, $p<.001$; Combined Cohorts: $r=0.696$, $p<.001$).

Posttest outcomes for 10th grade Gateway English 10. ANCOVA revealed a significant effect in English 10 for cohort membership ($F(1,95)=4.31$, $p=0.041$), with students in Cohort 2 having significantly higher scores on the English 10 Gateway than students in Cohort 1. There were no significant effects for charter school membership ($F(1,95)=1.05$, $p=0.308$) or the interaction of the charter and cohort membership ($F(1,95)=0.35$, $p=0.556$). The adjusted effect size for the combined cohorts was 0.205, thereby reflecting a small directional program effect in favor of City U, where students answered a larger percentage of questions correctly compared to controls (78.24% vs. 76.33%) (see Table 2).

Gateway English 10 proficiency levels. Using three proficiency levels, the chi-square test indicated no significant difference in student proficiency between City U and control students in English 10 (Cohort 1: $\chi2(2)=2.200$, $p=0.333$; Cohort 2: $\chi2(2)=1.548$, $p=0.461$; Combined Cohorts: $\chi2(2)=3.559$, $p=0.169$). When two proficiency levels were considered, there was also no significant difference in proficiency (Cohort 1: $\chi2(1)=2.154$, $p=0.142$; Cohort 2: $\chi2(1)=1.014$, $p=0.314$; Combined Cohorts: $\chi2(1)=3.093$, $p=0.079$) (see Table 3). All City U students in the combined cohort (100%) scored Proficient or Advanced compared to 94% of controls, with both groups doing better than the district (92.7%), and only City U doing better than the state (96.2%).

Summary of Results. There were no significant differences in 9th grade Algebra I performance between City U and controls. While Cohort 2 significantly outscored Cohort 1 in English 10 at City U, there were no significant differences between City U and control students in English 10 performance.

YO! Academy

9th Grade. Of 23 Yo! 9th grade students available, 6 were dropped. Of these, 3 were not continuously enrolled and 3 were missing all 2005-06 data. As a result, 17 Yo! students were available for matching. Of these, 11 were matched with comparable students in non-charter schools on all criteria and another 6 were matched to controls with a discrepancy on baseline location only. In addition, there were 17 students in tenth grade, 8 in eleventh grade, and 6 in twelfth grade taking Algebra I in the 2006-07

year. Due to the small sample sizes, separate grade level analyses were not conducted, and these students were excluded from the analysis.

Using the number of items answered correctly in 8th grade Math from the 2005-06 TCAP/AT, one-way ANOVA confirmed the similarity of the matching process ($F=0.02$, $p=0.898$), with the effect size close to zero. The mean number correct in both subjects for Yo! and control students was above that needed to score Proficient (see Table 1). Correlations between baseline and outcome achievement scores was moderate to strong, with $r=0.663$ ($p<.001$).

Posttest outcomes for 9th grade Gateway Algebra I. ANCOVA indicated a significant effect in Algebra I for charter school membership ($F(1,31)=10.12$, $p=0.003$), with controls outperforming Yo! students. The adjusted effect size was -1.122, reflecting a substantial program effect in Algebra I in favor of control students. Controls answered a notably larger percentage of questions correctly compared to Yo! students (68.76% vs. 58.40) (see Table 2).

Gateway Algebra I proficiency levels. The chi-square test indicated no significant difference in student proficiency between Yo! and control students in Algebra I using either three or two proficiency levels (3 proficiency levels: $\chi2(2)=3.778$, $p=0.151$; 2 proficiency levels: $\chi2(1)=0.567$, $p=0.452$) (see Table 3). Yo! had a smaller percentage of students (64.7%) score Proficient or Advanced in Algebra I compared to controls (76.5%), and was also outperformed by both the district (65.2%) and the state (86.3%).

10th Grade. There were 33 Yo! students available in 10th grade. Ten were dropped prior to the matching process. Of these, 3 were not continuously enrolled, 1 was a special education student, and 6 students were missing 2004-05 data. Therefore, 23 Yo! students were available for matching. Of these, 16 were matched to controls satisfying all criteria, and 7 were matched to controls with a discrepancy on baseline location only. Of the 23 Yo! students selected for analysis, 5 were in Cohort 1 and 18 were in Cohort 2. Due to the small sample size in Cohort 1, the analysis was conducted on the combined cohorts.

One-way ANOVA verified the quality of the matching process based upon the number of items answered correctly in 8th grade Reading/LA from the 2004-05 TCAP/AT ($F=0.00$, $p=0.952$), with an effect size approximating zero. The mean number correct for both Yo! and control students was above that needed to score Proficient (see Table 1). Correlations between baseline and outcome achievement scores was strong ($r=0.765$, $p<.001$).

Posttest outcomes for 10th grade Gateway English 10. ANCOVA indicated no significant effect in English 10 for charter school membership ($F(1,43)=0.30$, $p=0.587$). The adjusted effect size for the combined cohorts was -0.165, thereby reflecting a slight program effect in English 10 in favor of controls. Control students (73.04%) had a larger percentage of questions correct compared to Yo! students (71.78%) (see Table 2).

Gateway English 10 proficiency levels. Based on three proficiency levels, the chi-square test indicated no significant difference in student proficiency between Yo! and control students in English 10 ($\chi2(2)=1.207$, $p=0.547$). When two proficiency levels were considered, there was also no significant difference ($\chi2(1)=1.022$, $p=0.312$) (see Table 3). For the combined cohorts, all controls (100%) scored Proficient or Advanced in English 10 compared to 95.7% of Yo! students. While both groups surpassed the district (92.7%), only controls did better than the state (96.2%).

Summary of Results. Control students outscored Yo! students in Algebra I in 9th grade, while there were no significant differences in English 10 performance between Yo! students and controls.

Fourth Year Schools

Memphis Academy for Health Sciences (MAHS)

6th Grade. Of 75 6th grade MAHS students available for analysis, 34 were dropped for the following reasons: 6 were special education students, 18 were not continuously enrolled, 7 were missing all data in the 2005-06 year, and 3 had been retained from the previous year. Thus, 41 MAHS students were available for matching. Of these, 21 were matched with comparable students on all criteria, 19 were matched with controls on all criteria except baseline location, and 1 did not have a matched control. Consequently, 40 students and their matched controls were selected for analysis.

One-way ANOVA utilizing the number of items answered correctly in 5th grade Math and Reading/LA from the 2005-06 TCAP/AT validated the matching process in both subjects (Math: $F=0.01$, $p=0.912$; Reading/LA: $F=0.00$, $p=0.913$), with effect sizes nearing zero. The mean number correct for both MAHS and control students in Math and Reading/LA was above the number needed to score Proficient (see Table 1). Correlations between baseline and outcome achievement scores were moderate to strong, with $r=0.726$ ($p<.001$) for Math and $r=0.725$ ($p<.001$) for Reading/LA.

Posttest outcomes for 6th grade. MANCOVA indicated a significant effect for charter school membership (Wilks' Lambda=0.904, $F(2,75)=3.97$, $p=0.023$), with follow up ANCOVAs showing a significant effect in Math ($F(1,76)=4.75$, $p=0.032$), and no significant difference in Reading/LA ($F(1,76)=0.86$, $p=0.356$), with MAHS students scoring significantly higher than controls in Math. Adjusted effect sizes for Math and Reading/LA were 0.494 and -0.211 respectively, reflecting fairly strong program effects in Math in favor of MAHS. MAHS students answered a larger percentage of questions correctly in Math compared to controls (53.96% vs. 50.71%), but a slightly smaller percentage correct in Reading/LA (51.09% vs. 52.94%) (see Table 2).

TCAP/AT proficiency levels. The chi-square test revealed no significant differences between MAHS and control students in student proficiency levels in either Math or Reading/LA (Math: $\chi2(2)=0.106$, $p=0.948$; Reading/LA: ($\chi2(2)=0.750$, $p=0.687$). When considering only two performance levels, the chi-square test also indicated no significant difference in either Math ($\chi2(1)=0.000$, $p=1.000$) or Reading/LA ($\chi2(1)=0.721$, $p=0.396$) (see Table 3). Both MAHS and controls had 95% of students score Proficient or Advanced in Math, and both were above the levels of the district (81%), and the state (89%). In Reading/LA, a larger percentage of control students (95%) scored Proficient or Advanced compared to MAHS (90%), while both were above the district (84.9%). Only controls were above the level of the state (91.8%).

7th Grade. Of 100 7th grade MAHS students available for analysis, 43 were dropped prior to the matching process: 8 were special education students, 27 were not continuously enrolled, 1 was missing 2006-07 membership data, 1 was missing all data for both the 2004-05 and 2005-06 years, 2 were missing all baseline data in the 2004-05 year, and 4 had been retained from the previous year. As a result, 57 MAHS students were available for matching. Of these, 23 were matched with controls on all criteria and 32 were matched to controls with a discrepancy on baseline location only. Two students did not have matched controls. Therefore, 55 students were selected for analysis, with 19 in Cohort 1 and 36 in Cohort 2.

One-way ANOVA upheld the adequacy of the matching process based on the number of items answered correctly in 5th grade Math and Reading/LA from the 2004-05 TCAP/AT (Cohort 1: Math ($F=0.03$, $p=0.863$); Reading/LA ($F=0.02$, $p=0.891$); Cohort 2: Math ($F=0.03$, $p=0.864$); Reading/LA ($F=0.01$, $p=0.929$); Combined Cohorts: Math ($F=0.06$, $p=0.811$); Reading/LA ($F=0.00$, $p=0.989$)), with effect sizes for both groups approximating zero. The mean number correct in both subjects for MAHS and control students was above the number needed to score Proficient (see Table 1).

Correlations between baseline and outcome achievement scores were moderate to strong Cohort 1: Math ($r=0.604$, $p<.001$); Reading ($r=0.704$, $p<.001$); Cohort 2: Math ($r=0.738$, $p<.001$); Reading ($r=0.740$, $p<.001$); Combined Cohorts: Math ($r=0.696$, $p<.001$); Reading ($r=0.725$, $p<.001$)).

Posttest outcomes for 7th grade. MANCOVA indicated a significant effect at the multivariate level for charter school membership (Wilks' Lambda=0.943, F(2,103)=3.11, p=0.049), while there was no significant effect for either cohort (Wilks' Lambda=0.985, F(2,103)=0.80, p=0.452) or the interaction of charter membership and cohort (Wilks' Lambda=0.963, F(2,103)=2.00, p=0.141). Tests of charter school membership effects indicated that MAHS students had significantly higher scores in Reading/LA compared to controls (F(1,104)=6.11, p=0.015), but there was no group difference in Math (F(1,104)=2.24, p=0.138). Adjusted effect sizes for the combined cohorts in Math and Reading/LA were 0.288 and 0.479 respectively, reflecting fairly strong program effects in Reading/LA. In both subjects, MAHS students answered a larger percentage of questions correctly compared to controls (Math: 56.04% vs. 53.19%; Reading/LA: 55.05% vs. 50.90% respectively) (see Table 2).

TCAP/AT proficiency levels. The chi-square test revealed no significant differences between MAHS and control students in either Math or Reading/LA proficiency (Cohort 1: Math ($\chi2(2)=5.738$, p=0.057); Reading/LA ($\chi2(1)=1.310$, p=0.252); Cohort 2: Math ($\chi2(2)=1.414$, p=0.493); Reading/LA ($\chi2(2)=2.229$, p=0.328); Combined Cohorts: Math ($\chi2(2)=2.639$, p=0.267); Reading/LA ($\chi2(2)=3.120$, p=0.210)). There was also no significant difference in proficiency between groups in either subject when only two levels of proficiency were considered (Cohort 1: Math ($\chi2(1)=1.118$, p=0.290); Cohort 2: Math ($\chi2(1)=1.059$, p=0.304); Reading/LA ($\chi2(1)=1.934$, p=0.164); Combined Cohorts: Math ($\chi2(1)=2.157$, p=0.142); Reading/LA ($\chi2(1)=1.886$, p=0.170)) (see Table 3). For the combined cohorts, a larger percentage of control students (96.4%) scored Proficient or Advanced in Math compared to MAHS (89.1%), and both were above the district (77.9%) and state (88.4%). In Reading/LA, MAHS (98.2%) had a larger percentage of students score Proficient or Advanced compared to controls (92.7%), the district (81.1%), and the state (89.8%).

8th Grade. As students in 8th grade can take Algebra I as their Math course, two different analyses were conducted based on whether students were enrolled in Algebra I and took the Algebra I Gateway exam, or whether students were enrolled in the regular 8th grade Math course. With students taking Algebra I in 8th grade also being required to take the TCAP/AT, it was determined that these students' Math performance would be more accurately judged based upon their Gateway Algebra I (as opposed to TCAP/AT Math) performance, as their coursework would have prepared them for the content of the Algebra I Gateway rather than the TCAP/AT.

The first analysis involved students taking the regular 8th grade Math course. As with the other grade levels, these students were matched to similar, non-charter 8th grade students also enrolled in regular 8th grade Math, and both the 2006-07 TCAP/AT Math and Reading/Language Arts scores were compared for this set of students.

For the second analysis of students enrolled in 8th grade Algebra I, no student level matching was conducted. Instead, the performance of 8th grade Algebra I students at MAHS was compared to the performance of all other 8th grade Algebra I test takers in the district. For these same students, their 8th grade TCAP/AT Reading/LA results were compared to all other 8th grade students in the district. In this second analysis, the 7th grade TCAP/AT scores in Math and Reading/Language Arts were used as the covariate. Student matching was not carried out in this case because of the difficulty in finding matches for this unique subset of students.

Regular 8th Grade Math. Fifty-two MAHS students in 8th grade took only the TCAP/AT (i.e., took regular 8th grade Math and not the Algebra I course) and did not take the Gateway Algebra I exam in the 2006-07 year. Twenty-three of these students were dropped: 11 were not continuously enrolled, 5 were special education students, 3 had been retained from the previous year, 1 was missing data from the 2003-04 through 2005-06 years, 1 was missing the 2003-04 data and the location data for the 2004-05 year, and 2 were missing the grade level and location data for the 2005-06 year. Thus, 29 MAHS students were available for matching. Fourteen of these were matched to controls satisfying all criteria. Fifteen were matched to controls with a discrepancy on baseline location only. Three students were in Cohort 1 (first year of attendance at MAHS), 9 were in Cohort 2 (second year of attendance at MAHS), and 17 were in Cohort 3 (third year of attendance at MAHS). As the number of students in Cohorts 1 and 2 was low, the analysis was conducted on all 29 students in 8th grade without regard to cohort.

Utilizing the 5th grade NCE scores in Math and Reading/LA from the 2003-04 TCAP/AT, one-way ANOVA supported the accuracy of the matches (Math: F=0.00, p=0.989; Reading/LA: F=0.00, p=0.989), with effect sizes close to zero. The mean NCE for both MAHS and control students was below the national average of 50 in both Math and Reading/LA (see Table 1). Correlations between baseline and outcome achievement scores were weak to moderate (Math: r=0.355, p=0.006; Reading/LA: r=0.545, p<.001).

Posttest outcomes for 8th grade TCAP/AT. At the multivariate level, MANCOVA indicated a significant effect for charter school membership (Wilks' Lambda=0.773, F(2,53)=7.76, p=0.001). Follow up ANCOVAs indicated significant effects in both Math (F(1,54)=4.88, p=0.031) and Reading/LA (F(1,54)=15.42, p<.001) in favor of MAHS. Adjusted effect sizes for Math and Reading/LA were 0.591 and 1.052 respectively, reflecting extremely strong program effects in both subjects, particularly in Reading/LA. In both subjects, MAHS students answered a larger percentage of questions correctly compared to controls (Math: 45.32% vs. 39.81%; Reading/LA: 49.40% vs. 41.01% respectively) (see Table 2).

TCAP/AT proficiency levels. The chi-square test revealed no significant differences between MAHS and control students in proficiency for either Math or Reading/LA (Math: $\chi 2(2)=3.894$, p=0.143; Reading/LA: $\chi 2(2)=3.192$, p=0.203). As with the previous analysis, when two levels of proficiency were considered, there was also no significant difference in proficiency for either subject (Math: $\chi 2(1)=3.288$, p=0.070; Reading/LA: $\chi 2(1)=3.164$, p=0.075) (see Table 3). MAHS (93.1%) had a larger percentage of students score Proficient or Advanced in Math compared to controls (75.9%), the district (77.8%), and the state (88%). In Reading/LA, 100% of MAHS students scored Proficient or Advanced compared to 89.7% of controls, with both groups above the district (84.8%), and only MAHS above the state (92%).

8th Grade Algebra I. Forty-one students in 8th grade took both the TCAP/AT and Gateway Algebra I exam in the 2006-07 year. They were compared to a control group that included all other eighth graders in Memphis City Schools who took the Gateway Algebra I exam and TCAP/AT Reading/LA test in the 2006-07 year. Two MAHS students were dropped from the analysis: 1 student was not continuously enrolled, and 1 was missing the grade level data for the 2005-06 year. There were 1663 control students who took the Gateway Algebra I exam in the 2006-07 year (December 2006 and May 2007 administrations). Out of these, 161 were dropped: 77 were not continuously enrolled, 6 were special education students, 20 were ELL students, 12 had been retained from the previous year, 40 were missing the grade level for the 2005-06 year, 2 were missing the test data for the 2005-06 year, and 4 were missing the Reading/LA test data for the 2006-07 year. As a result, 39 MAHS students and 1502 control students were available for analysis.

Baseline number of item answered correctly in Math and Reading/LA from the 2005-06 TCAP/AT (7th grade) were utilized, and one-way ANOVA indicated that baseline scores did not differ significantly between MAHS and control students (Math: F(1,1539)=0.79, p=0.375; Reading/LA: F(1,1539)=0.51, p=0.476), with accompanying small effect sizes (Math: d=-0.145; Reading/LA: d=-0.116). In Math, the mean number correct for MAHS students was just short and for control students was just above the number needed to score Advanced. In Reading/LA, the mean number correct for both groups was above that needed to score Proficient, and was just short of that needed to score Advanced (see Table 1). Correlations between pre- and post-charter achievement were strong (Math: r=0.791, p<.001; Reading/LA: r=0.827, p<.001).

Posttest outcomes for 8th grade Gateway Algebra I and TCAP/AT Reading/LA. MANCOVA indicated no significant effects for charter school membership (Wilks' Lambda=0.996, F(2,1536)=2.74, p=0.065). The adjusted effect sizes for Algebra I and TCAP/AT Reading/LA were -0.389 and -0.131, reflecting a relatively stronger performance by controls in Algebra I. Control students answered a larger percentage of questions correctly in Algebra I (52.68% vs. 50.32%) and TCAP/AT Reading/LA (63.53% vs. 62.61%) compared to MAHS students (see Table 2).

8th Grade Gateway Algebra I and TCAP/AT Reading/LA proficiency levels. The chi-square test indicated a significant difference in student proficiency between MAHS and control students in Algebra I

using both three and two proficiency levels (3 levels: $\chi 2(2)=20.130$, $p<.001$; 2 levels: $\chi 2(1)=4.962$, $p=0.026$). There was no significant difference in proficiency for Reading/LA (3 levels: $\chi 2(2)=0.665$, $p=0.717$; 2 levels: $\chi 2(1)=0.526$, $p=0.468$). In 8th grade Algebra I, there were more control students than expected at both the Below Proficient and Advanced levels compared to MAHS (11.32% vs. 0% and 53.33% vs. 30.77% respectively), while MAHS had more students than expected at the Proficient level compared to controls (69.23% vs. 35.35%). All MAHS students (100%) scored Proficient or Advanced in 8th grade Algebra I compared to 88.7% of controls. Both MAHS and controls were above the level of the district (87.5%), while only MAHS was above the level of the state (93.7%). In Reading/LA, 100% of MAHS students were also Proficient or Advanced, compared to 98.7% of controls. Both groups were above the level of the district (84.8%) and the state (92%) (see Table 3).

Summary of Results. There were significant differences in favor of MAHS students at all grade levels, with MAHS superior in 6th grade Math, 7th grade Reading/LA, and 8th grade Math and Reading/LA (for those students who took regular 8th grade Math). While controls had a significantly higher percentage score Advanced in 8th grade Algebra I, MAHS had a significantly higher percentage score Proficient and Advanced combined.

Memphis Academy of Science and Engineering (MASE)

6th Grade. Out of 53 MASE students in 6th grade, 19 were dropped. Of these, 12 were not continuously enrolled, 3 were special education students, and 4 were missing 2005-06 baseline data. Therefore, 34 students were available for matching. Thirty-three were matched to controls, of which 17 were matched on all variables and 16 others were matched with a discrepancy on prior location only. One student did not have a matched control.

Utilizing the number of items answered correctly in 5th grade Math and Reading/LA from the 2005-06 TCAP/AT, one-way ANOVA confirmed the adequacy of the matching process in both Math and Reading/LA (Math: $F=0.00$, $p=0.977$; Reading/LA: $F=0.04$, $p=0.849$), with effect sizes close to zero. The mean number correct for both MASE and control students in Math and Reading/LA was above the number needed to score Proficient (see Table 1). Correlations between baseline and outcome achievement scores were moderate to strong (Math: $r=0.713$, $p<.001$; Reading/LA: $r=0.664$, $p<.001$).

Posttest outcomes for 6th grade. MANCOVA indicated a significant effect for charter school membership (Wilks' Lambda=0.824, $F(2,61)=6.51$, $p=0.003$). Follow up ANCOVAs demonstrated significant effects for Math ($F(1,62)=9.83$, $p=0.003$), with MASE students scoring significantly lower than controls. There was no significant effect in Reading/LA ($F(1,62)=0.35$, $p=0.555$). Adjusted effect sizes for Math and Reading/LA were -0.784 and 0.148 respectively, reflecting strong program effects in Math in favor of controls. MASE students answered a larger percentage of questions correctly in Reading/LA compared to controls (53.92% vs. 52.53%), but a smaller percentage of questions correctly in Math (49.10% vs. 54.64%) (see Table 2).

TCAP/AT proficiency levels. The chi-square test showed no significant difference in student proficiency between MASE and control students for either Math or Reading/LA (Math: $\chi 2(2)=4.320$, $p=0.115$; Reading/LA: $\chi 2(2)=0.749$, $p=0.688$). Using two performance levels, the chi-square test also indicated no significant difference in either subject (Math: $\chi 2(1)=1.065$, $p=0.302$; Reading/LA: $\chi 2(1)=0.733$, $p=0.392$). Controls (97%) had a larger percentage of students score Proficient or Advanced in Math compared to MASE (90.9%), while both were above the district (81%) and the state (89%). In Reading/LA, MASE (93.9%) had a larger percentage of students score Proficient or Advanced compared to controls (87.9%) (see Table 3). Both were above the district (84.9%), but only MASE was above the level of the state (91.8%).

7th Grade. Out of 92 MASE students in 7th grade, 28 were dropped. Of these, 10 were not continuously enrolled, 5 were special education students, 3 were retained from the previous year, 5 were missing both the 2004-05 and 2005-06 data, 2 were missing the 2004-05 data, and 3 were missing the 2005-06 data. Sixty-three out of the 64 MASE students available were matched to controls. Twenty-five

were matched on all variables and 38 were matched with a discrepancy only on prior location. One student did not have a matched control.

One-way ANOVA verified the adequacy of the matching process using the number of items answered correctly in 5th grade Math and Reading/LA from the 2004-05 TCAP/AT (Math (F=0.01, p=0.928); Reading (F=0.01, p=0.918), with effect sizes close to zero. The mean number correct in both subjects for MASE and control students was above the number needed to score Proficient (see Table 1). Baseline and outcome achievement score correlations were moderate to strong (Math: r=0.713, p<.001); Reading (r=0.609, p<.001).

Posttest outcomes for 7th grade. MANCOVA indicated no significant effect for charter school membership (Wilks' Lambda=0.985, F(2,121)=0.93, p=0.397). Adjusted effect sizes for Math and Reading/LA were 0.152 and 0.243 respectively, reflecting relatively weak program effects in both subject areas. In Math and Reading/LA, MASE students answered a larger percentage of questions correctly compared to controls (Math: 54.62% vs. 53.21%; Reading/LA: 52.30% vs. 49.91%) (see Table 2).

TCAP/AT proficiency levels. The chi-square test revealed no significant differences in Math or Reading/LA proficiency between MASE and control students (Math: $\chi 2(2)=0.429$, p=0.807; Reading/LA $\chi 2(2)=2.271$, p=0.321). There were also no significant differences in proficiency by group when two levels of proficiency were considered (Math: $\chi 2(1)=0.321$, p=0.571; Reading/LA: $\chi 2(1)=1.474$, p=0.225). MASE (90.5%) had a larger percentage of students score Proficient or Advanced in Math compared to controls (87.3%), while both were above the district (77.9%), and only MASE was above the state (88.4%). In Reading/LA, MASE (93.7%) once again had a larger percentage of students score Proficient or Advanced compared to controls (87.3%) (see Table 3). Both were above the district (81.1%), but only MASE was above the level of the state (89.8%).

8th Grade. The analysis for 8th grade students as MASE was handled in the same manner described in the section for 8th grade students at MAHS (see page 21).

Regular 8th Grade Math. Ninety-eight students in 8th grade only took the TCAP/AT (i.e., took regular 8th grade Math and not the Algebra I course) and did not take the Gateway Algebra I exam in the 2006-07 year. Twenty-seven of these were dropped: 7 were not continuously enrolled, 7 were special education students, 10 were missing the 2003-04 data, and 3 were missing grade level and location data for the 2005-06 year. Thus, 71 MASE students were available for matching. Twenty-seven were matched to controls satisfying all criteria. Forty-one were matched to controls with a discrepancy on baseline location only. Three were matched to controls with a discrepancy on both baseline location and lunch status (MASE: reduced meal; Control: free meal). Seventeen of the 71 MASE students were in Cohort 1, and 54 were in Cohort 2.

Baseline assessment of student achievement utilized the NCE scores in Math and Reading/LA from the 2003-04 TCAP/AT. One-way ANOVA upheld the suitability of the matching process (Cohort 1: Math (F=0.01, p=0.926); Reading (F=0.03, p=0.863); Cohort 2: Math (F=0.01, p=0.912); Reading (F=0.01, p=0.939); Combined Cohorts: Math (F=0.02, p=0.888); Reading (F=0.03, p=0.865)), with effect sizes approximating zero. The mean NCE for both MASE and control students in Math and Reading/LA was below the national average of 50 (see Table 1).

Baseline and outcome achievement score correlations ranged from moderate to strong (Cohort 1: Math (r=0.452, p=0.007); Reading (r=0.790, p<.001); Cohort 2: Math (r=0.547, p<.001); Reading (r=0.472, p<.001); Combined Cohorts: Math (r=0.536, p<.001); Reading (r=0.577, p<.001)).

Posttest outcomes for 8th grade TCAP/AT. MANCOVA indicated a significant effect for charter school membership at the multivariate level (Wilks' Lambda=0.850, F(2,135)=11.90, p<.001). There were no significant effects for either cohort (Wilks' Lambda=0.995, F(2,135)=0.35, p=0.704), or the interaction of cohort and charter school membership (Wilks' Lambda=0.978, F(2,135)=1.55, p=0.217), meaning the cohorts performed relatively the same. Tests of charter school membership effects indicated that controls scored significantly higher than MASE students in Math (F(1,136)=10.86, p=0.001). Adjusted effect sizes

for the combined cohorts in Math and Reading/LA were -0.557 and 0.286 respectively, reflecting a strong program effect in Math in favor of control students. In Math, MAHS students got a lower percentage of questions correct compared to controls (40.21% vs. 46.14%) while the opposite was true in Reading/LA (50.65% vs. 47.55%) (see Table 2).

TCAP/AT proficiency levels. The chi-square test indicated significant differences between MASE and control students in Reading/LA proficiency for both Cohorts 1 and 2 (Cohort 1: Math ($\chi 2(2)=3.290$, $p=0.193$); Reading/LA ($\chi 2(2)=6.908$, $p=0.032$); Cohort 2: Math ($\chi 2(2)=3.862$, $p=0.145$); Reading/LA ($\chi 2(2)=6.953$, $p=0.031$; Combined Cohorts: Math ($\chi 2(2)=2.404$, $p=0.301$); Reading/LA ($\chi 2(2)=3.164$, $p=0.206$)). In Cohort 1, the proportion of MASE students scoring at the Proficient level in Reading/LA (88.24%) was significantly higher than that of controls (47.06%). There was also a significantly higher percentage of MASE students in Cohort 2 reaching the Advanced level in Reading/LA (31.48%) compared to controls (11.11%) (see Table 3).

There were no significant differences in either Math or Reading/LA when only two levels of proficiency were considered (Cohort 1: Math ($\chi 2(1)=1.030$, $p=0.310$); Reading/LA ($\chi 2(1)=2.125$, $p=0.145$)); Cohort 2: Math ($\chi 2(1)=3.429$, $p=0.064$); Reading/LA ($\chi 2(1)=0.706$, $p=0.401$); Combined Cohorts: Math ($\chi 2(1)=2.379$, $p=0.123$); Reading/LA ($\chi 2(1)=2.119$, $p=0.145$)) (see Table 3). The combined cohorts for MASE (77.5%) had a smaller percentage of students score Proficient or Advanced in Math compared to controls (87.3%), and were outperformed by both the district (77.8%) and state (88%). In Reading/LA, MASE (97.2%) had a larger percentage of students score Proficient or Advanced compared to controls (91.6%), the district (84.8%), and the state (92%).

8th Grade Algebra I. Fifty-three students took both the TCAP/AT and Gateway Algebra I exam in the 2006-07 year, and were compared to a control group that included all other eighth graders in Memphis City Schools who took the Gateway Algebra I exam in the 2006-07 year. Four MASE students were dropped from the analysis: 3 students were not continuously enrolled, and 1 was missing the grade level data for the 2005-06 year. There were 1651 control students who took the Gateway Algebra I exam in the 2006-07 year. Out of these, 159 were dropped: 75 were not continuously enrolled, 6 were special education students, 20 were ELL students, 12 had been retained from the previous year, 40 were missing the grade level for the 2005-06 year, 2 were missing the test data for the 2005-06 year, and 4 were missing Reading/LA test data for the 2006-07 year. Thus, 49 MASE students and 1492 control students were available for analysis.

Utilizing the baseline number of item answered correctly in Math and Reading/LA from the 2005-06 (7th grade) TCAP/AT, one-way ANOVA revealed that baseline scores in Math differed between MASE and control students ($F(1,1539)=15.24$, $p<.001$) in favor of controls, while baseline scores in Reading/LA did not ($F(1,1539)=0.62$, $p=0.431$). Effect sizes were -0.566 and -0.115 respectively. The mean number correct for MASE in Math was above that needed to score Proficient, and for controls was above the number needed to score Advanced. In Reading/LA, MASE was just below, and control students just above the number needed to score Advanced (see Table 1). The baseline and outcome achievement score correlations were strong (Math: $r=0.791$, $p<.001$; Reading/LA: $r=0.827$, $p<.001$).

Posttest outcomes for 8th grade Gateway Algebra I and TCAP/AT Reading/LA. MANCOVA revealed a significant difference for charter school membership (Wilks' Lambda=0.984, $F(2,1536)=12.28$, $p<.001$), with tests of charter school effects indicating a significant difference in Reading/LA ($F(1,1537)=20.56$, $p<.001$) in favor of MASE students, and no difference in Math ($F(1,1537)=0.52$, $p=0.471$). However, this non-significant outcome in Math should be interpreted with caution as the groups, as noted previously, were significantly different (in favor of controls) on the baseline year Math assessment (with an effect size of -0.566). The significant difference for MASE in Reading/LA is even more notable in that the mean for controls at the baseline was at the Advanced level, compared to the Proficient level for MASE. The adjusted effect sizes for Algebra I and Reading/LA were -0.108 and 0.655, reflecting strong program effects in Reading/LA for MASE. MASE students answered a larger percentage of questions correctly in Reading/LA compared to controls (67.96% vs. 63.36%), but a slightly smaller percentage in Math (51.99% vs. 52.64%) (see Table 2).

8th Grade Gateway Algebra I and TCAP/AT Reading/LA proficiency levels. The chi-square test indicated a significant difference between MASE and control students in Algebra I proficiency ($\chi 2(2)=7.166$, $p=0.028$), and no difference in Reading/LA ($\chi 2(2)=4.298$, $p=0.117$) using three proficiency levels. In Algebra I, there were more MASE students (53.06%) and fewer control students (35.66%) than expected at the Proficient level, and a larger proportion of control students (53.35%) than expected compared to MASE (34.69%) reaching the Advanced level (see Table 3).

When two proficiency levels were considered, there were no differences in either Algebra I or Reading/LA between MASE and control students (Algebra I: $\chi 2(1)=0.076$, $p=0.783$; Reading/LA: $\chi 2(1)=0.666$, $p=0.415$). Controls (89%) had a larger percentage score Proficient or Advanced in 8th grade Algebra I compared to MASE (87.8%) (see Table 3). Both groups outperformed the district (87.5%) and underperformed the state (93.7%). All MASE students (100%) were Proficient or Advanced in 8th grade Reading/LA, which was above the level of controls (98.7%), the district (84.8%), and the state (91.5%).

9th Grade. Forty-four MASE students in 9th grade were available. Out of these, 6 were not continuously enrolled, 1 was missing the location and grade level data for the 2005-06 year, 1 was missing the location data for the 2004-05 year, and 9 were missing the 2002-03 data. Therefore, these 17 students were dropped and the remaining 27 students were available for matching. Eleven students were matched to controls satisfying all criteria. Fourteen were matched to controls with a discrepancy on baseline location only. Two did not have matched controls. Consequently, 25 students and their comparable controls were selected for analysis, with 12 students in Cohort 1, 5 in Cohort 2, and 8 in Cohort 3. Due to the small sample sizes for Cohorts 1 and 2, the analysis was performed on all students in 9th grade without regard to cohort. In addition, there were 14 students in tenth grade who took the Gateway Algebra I exam in the 2006-07 year. Due to the small sample size, a separate grade level analysis was not conducted, and these students were excluded from the analysis.

Baseline comparison of student achievement utilized the 5th grade NCE score in Math from the 2002-03 TCAP/AT. One-way ANOVA confirmed the adequacy of the matching process ($F=0.00$, $p=0.962$), with the effect size approaching zero. The mean NCE for both MASE and control students was below the national average of 50 (see Table 1). The baseline and outcome achievement score correlation was low to moderate ($r=0.395$, $p=0.005$).

Posttest outcomes for 9th grade Gateway Algebra I. ***A***NCOVA indicated a significant effect in Algebra I for charter school membership ($F(1,47)=4.13$, $p=0.048$), with MASE students scoring significantly lower than controls. The adjusted effect size for the combined cohorts was -0.585, indicating a large program effect in favor of controls. Control students answered a larger percentage of questions correctly compared to MASE (68.62% vs. 62.36%) (see Table 2).

Gateway Algebra I proficiency levels. Using three proficiency levels, the chi-square test indicated no significant difference in student proficiency between MASE and controls ($\chi 2(2)=1.391$, $p=0.499$). When two proficiency levels were considered, there was also no significant difference in performance ($\chi 2(1)=0.758$, $p=0.384$) (see Table 3). In total, MASE (84%) had a smaller percentage of students score Proficient or Advanced in Math compared to controls (92%), while both groups outperformed the district (65.2%), and only controls surpassed the state (86.3%).

10th Grade. There were 107 MASE 10th grade students available. Thirty-one were dropped prior to the matching process: 10 were not continuously enrolled, 2 were special education students, 2 were missing the location data for the 2003-04 and 2004-05 years, and 17 were missing the 2001-02 baseline data. Therefore, 76 students were available for matching. Twenty were matched to control students satisfying all criteria. Fifty-two were matched to controls with a discrepancy on baseline location only. Four did not have matched controls. As a result, 72 MASE students and their comparable controls were selected for the analysis. There were 8 MASE students in Cohort 1, 1 in Cohort 2, 8 in Cohort 3, and 55 in Cohort 4. Due to the small sample sizes for Cohorts 1, 2 and 3, the analysis was performed on the combined group of 72 students without regard to cohort.

Utilizing the NCE scores in Reading/LA from the 2001-02 TCAP/AT, one-way ANOVA validated the matching process ($F=0.01$, $p=0.916$), with the effect size nearly zero. The mean NCE for both MASE and control students was above the national average of 50 (see Table 1). The baseline and outcome achievement score correlation was moderate ($r=0.582$, $p<.001$).

Posttest outcomes for 10th grade Gateway English 10. ANCOVA indicated a significant difference in English 10 performance based on charter school membership ($F(1,141)=5.69$, $p=0.018$), with MASE students scoring significantly higher than controls. The adjusted effect size was 0.402, reflecting a fairly strong program effect for MASE, who answered a larger percentage of questions correctly (79.95%) compared to controls (76.44%) (see Table 2).

Gateway English 10 proficiency levels. The chi-square test looking at three proficiency levels indicated no significant difference in English 10 performance between MASE and controls ($\chi 2(2)=2.566$, $p=0.277$). When two proficiency levels were considered, there was also no significant difference in performance ($\chi 2(1)=1.007$, $p=0.316$). All MASE students (100%) were Proficient or Advanced compared to 98.6% of controls (see Table 3). Both groups outperformed both the district (92.7%) and the state (96.2%).

Summary of Results. MASE had the greatest impact in 8th grade, where students taking Algebra I outscored controls in Reading/LA, and students taking regular 8th grade Math had a significantly higher percentage of students in Reading/LA score Proficient in Cohort 1 and Advanced in Cohort 2. Controls, on the other hand, outscored MASE in 6th and 8th grade Math. Controls also had a significantly higher percentage score Advanced in 8th grade Algebra I, and outscored MASE students in 9th grade Algebra I as well.

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Table 1. Baseline Means, Standard Deviations, and Effect Sizes

School, Grade, and Cohort	Group	Mathematics			Reading/LA		
		n	M	SD	n	M	SD
City University							
9th Grade (1st Year)	Charter students	48	33.48	8.99			
	Control students	48	33.50	8.84			
	Effect Size	***d*=-0.002**[4]					
	One-way ANOVA	*M*SE=79.510; *F*=0.00; *p*=0.991					
10th Grade (1st Year)	Charter students				14	32.43	6.90
	Control students				14	32.21	7.06
	Effect Size				***d*=0.033**		
	One-way ANOVA				*M*SE=48.761; *F*=0.01 ; *p*=0.936		
10th Grade (2nd Year)	Charter students				36	34.31	7.40
	Control students				36	34.17	7.52
	Effect Size				***d*=0.019**		
	One-way ANOVA				*M*SE=55.667; *F*=0.01; *p*=0.937		
10th Grade (Combined Cohorts)	Charter students				50	33.78	7.25
	Control students				50	33.62	7.38
	Effect Size				***d*=0.022**		
	One-way ANOVA				*M*SE=53.453; *F*=0.01; *p*=0.913		

[4] Each effect size (or *d)* indicates the number of standard deviations by which the charter school student mean differs from the control student mean.

Table 1. Continued

School, Grade, and Cohort	Group	Mathematics			Reading/LA		
		n	M	SD	n	M	SD
KIPP Academy Nashville							
5th Grade (1st Year)	Charter students	47	36.02	10.93	47	34.49	10.97
	Control students	47	35.96	10.69	47	34.15	10.88
	Effect Size	***d*=0.006[1]**			***d*=0.031**		
	One-way ANOVA	*M*SE=116.901; *F*=0.00; *p*=0.977			*M*SE=119.323; *F*=0.02; *p*=0.880		
6th Grade (1st Year)	Charter students	6	34.50	12.55	6	34.83	12.12
	Control students	6	34.83	13.33	6	34.17	11.82
	Effect Size	***d*=-0.028**			***d*=0.060**		
	One-way ANOVA	*M*SE=167.633; *F*=0.00; *p*=0.965			*M*SE=143.367; *F*=0.01; *p*=0.925		
6th Grade (2nd Year)	Charter students	35	37.49	7.30	35	31.60	9.16
	Control students	35	37.63	6.77	35	31.09	9.13
	Effect Size	***d*=-0.020**			***d*=0.057**		
	One-way ANOVA	*M*SE=49.572; *F*=0.01; *p*=0.933			*M*SE=83.634; *F*=0.06; *p*=0.815		
6th Grade (Combined)	Charter students	41	37.05	8.13	41	32.07	9.54
	Control students	41	37.22	7.89	41	31.54	9.46
	Effect Size	***d*=-0.021**			***d*=0.056**		
	One-way ANOVA	*M*SE=64.162; *F*=0.01; *p*=0.923			*M*SE=90.287; *F*=0.07; *p*=0.799		

Table 1. Continued

School, Grade, and Cohort	Group	Mathematics			Reading/LA		
		n	M	SD	n	M	SD
MAHS							
6th Grade (1st Year)	Charter students	40	37.28	7.02	40	33.13	8.69
	Control students	40	37.45	7.13	40	33.25	8.67
	Effect Size	***d*=-0.024**			***d*=-0.014**		
	One-way ANOVA	*M*SE=50.050; *F*=0.01; *p*=0.912			*M*SE=75.357; *F*=0.00; *p*=0.913		
7th Grade (1st Year)	Charter students	19	32.79	7.45	19	31.89	6.91
	Control students	19	33.21	8.12	19	31.58	7.17
	Effect Size	***d*=-0.055**			***d*=0.045**		
	One-way ANOVA	*M*SE=55.453; *F*=0.03; *p*=0.863			*M*SE=49.623; *F*=0.02; *p*=0.891		
7th Grade (2nd Year)	Charter students	36	34.36	8.12	36	30.58	6.34
	Control students	36	34.69	8.34	36	30.72	6.81
	Effect Size	***d*=-0.041**			***d*=-0.022**		
	One-way ANOVA	*M*SE=67.713; *F*=0.03; *p*=0.864			*M*SE=43.285; *F*=0.01; *p*=0.929		
7th Grade (Combined Cohorts)	Charter students	55	33.82	7.86	55	31.04	6.51
	Control students	55	34.18	8.00	55	31.02	6.89
	Effect Size	***d*=-0.046**			***d*=0.003**		
	One-way ANOVA	*M*SE=62.911; *F*=0.06; *p*=0.811			*M*SE=44.879; *F*=0.00; *p*=0.989		
8th Grade (1st Year)	Charter students	3	27.00	9.17	3	42.00	4.58
	Control students	3	29.67	6.66	3	43.00	4.58
	Effect Size	***d*=-0.408**			***d*=-0.267**		
	One-way ANOVA	*M*SE=64.167; *F*=0.17; *p*=0.704			*M*SE=21.000; *F*=0.07; *p*=0.803		
8th Grade (2nd Year)	Charter students	9	33.44	10.51	9	41.78	10.53
	Control students	9	32.33	11.03	9	42.44	10.45
	Effect Size	***d*=0.109**			***d*=-0.067**		
	One-way ANOVA	*M*SE=116.139; *F*=0.05; *p*=0.830			*M*SE=110.111; *F*=0.02; *p*=0.895		

Table 1. Continued

School, Grade, and Cohort	Group	Mathematics			Reading/LA		
		n	M	SD	n	M	SD
MAHS							
8th Grade (3rd Year)	Charter students	17	29.59	9.07	17	33.53	7.96
	Control students	17	29.77	8.90	17	33.06	8.36
	Effect Size	***d*=-0.021**			***d*=0.059**		
	One-way ANOVA	*M*SE=80.724; *F*=0.00; *p*=0.955			*M*SE=66.599; *F*=0.03; *p*=0.868		
8th Grade (Combined Cohorts)	Charter students	29	30.52	9.44	29	36.97	9.31
	Control students	29	30.55	9.20	29	37.00	9.77
	Effect Size	***d*=-0.003**			***d*=-0.003**		
	One-way ANOVA	*M*SE=86.936; *F*=0.00; *p*=0.989			*M*SE=91.089; *F*=0.00; *p*=0.989		
8th Grade Algebra I (Combined Cohorts)	Charter students	39	44.51	4.34	39	40.72	6.74
	Control students	1502	45.84	9.30	1502	41.72	8.69
	Effect Size	***d*=-0.145**			***d*=-0.116**		
	One-way ANOVA	*M*SE=84.791; *F*=0.79; *p*=0.375			*M*SE=74.732; *F*=0.51; *p*=0.476		
MASE							
6th Grade (1st Year)	Charter students	33	39.48	8.60	33	37.15	8.97
	Control students	33	39.42	8.40	33	36.73	9.03
	Effect Size	***d*=0.007**			***d*=0.047**		
	One-way ANOVA	*M*SE=72.32; *F*=0.00; *p*=0.977			*M*SE=81.01; *F*=0.04; *p*=0.849		
7th Grade (1st Year)	Charter students	63	35.00	7.88	63	30.59	7.84
	Control students	63	34.87	7.95	63	30.44	7.75
	Effect Size	***d*=0.017**			***d*=0.019**		
	One-way ANOVA	*M*SE=62.637; *F*=0.01; *p*=0.928			*M*SE=60.732; *F*=0.01; *p*=0.918		
8th Grade (1st Year)	Charter students	17	39.06	11.31	17	49.53	16.72
	Control students	17	39.41	10.72	17	48.53	16.69
	Effect Size	***d*=-0.033**			***d*=0.062**		
	One-way ANOVA	*M*SE=121.41; *F*=0.01; *p*=0.926			*M*SE=279.08; *F*=0.03; *p*=0.863		

Table 1. Continued

School, Grade, and Cohort	Group	Mathematics			Reading/LA		
		n	M	SD	n	M	SD
MASE							
8th Grade (2nd Year)	Charter students	54	35.74	12.96	54	44.15	11.17
	Control students	54	36.02	12.96	54	43.98	11.24
	Effect Size	***d*=-0.022**			***d*=0.015**		
	One-way ANOVA	*M*SE=167.96; *F*=0.01; *p*=0.912			*M*SE=125.60; *F*=0.01; *p*=0.939		
8th Grade (Combined Cohorts)	Charter students	71	36.54	12.59	71	45.44	12.80
	Control students	71	36.83	12.47	71	45.07	12.77
	Effect Size	***d*=-0.023**			***d*=0.029**		
	One-way ANOVA	*M*SE=156.997; *F*=0.02; *p*=0.888			*M*SE=163.47; *F*=0.03; *p*=0.865		
8th Grade Algebra I (Combined Cohorts)	Charter students	49	40.78	6.97	49	40.73	5.27
	Control students	1492	45.97	9.23	1492	41.72	8.73
	Effect Size	***d*=-0.566**			***d*=-0.115**		
	One-way ANOVA	*M*SE=84.003; *F*=15.24; *p*<.001			*M*SE=74.727; *F*=0.62; *p*=0.431		
9th Grade (1st Year)	Charter students	12	50.42	9.84			
	Control students	12	50.58	9.88			
	Effect Size	***d*=-0.017**					
	One-way ANOVA	*M*SE=97.174; *F*=0.00; *p*=0.967					
9th Grade (2nd Year)	Charter students	5	37.40	2.88			
	Control students	5	36.20	3.90			
	Effect Size	***d*=0.391**					
	One-way ANOVA	*M*SE=11.750; *F*=0.31; *p*=0.595					
9th Grade (3rd Year)	Charter students	8	36.75	12.94			
	Control students	8	37.75	12.33			
	Effect Size	***d*=-0.085**					
	One-way ANOVA	*M*SE=159.64; *F*=0.03; *p*=0.877					

Table 1. Continued

School, Grade, and Cohort	Group	Mathematics n	Mathematics M	Mathematics SD	Reading/LA n	Reading/LA M	Reading/LA SD
MASE							
9th Grade (Combined Cohorts)	Charter students	25	43.44	11.89			
	Control students	25	43.60	11.78			
	Effect Size	***d*=-0.014**					
	One-way ANOVA	*M*SE=140.087; *F*=0.00; *p*=0.962					
10th Grade (1st Year)	Charter students				8	47.38	22.18
	Control students				8	45.63	21.97
	Effect Size				***d*=0.085**		
	One-way ANOVA				*M*SE=487.411; *F*=0.03; *p*=0.876		
10th Grade (2nd Year)	Charter students				1	42.00	NA
	Control students				1	44.00	NA
	Effect Size				NA		
	One-way ANOVA				NA		
10th Grade (3rd Year)	Charter students				8	57.50	17.72
	Control students				8	56.63	17.07
	Effect Size				***d*=0.053**		
	One-way ANOVA				*M*SE=302.705; *F*=0.01; *p*=0.921		
10th Grade (4th Year)	Charter students				55	52.29	17.14
	Control students				55	52.24	16.48
	Effect Size				***d*=0.003**		
	One-way ANOVA				*M*SE=282.678; *F*=0.00; *p*=0.987		
10th Grade (Combined Cohorts)	Charter students				72	52.18	17.61
	Control students				72	51.88	17.05
	Effect Size				***d*=0.017**		
	One-way ANOVA				*M*SE=300.483; *F*=0.01; *p*=0.916		

Table 1. Continued

School, Grade, and Cohort	Group	Mathematics			Reading/LA		
		n	M	SD	n	M	SD
Memphis Business Academy							
6th Grade (1st Year)	Charter students	17	36.12	7.85	17	34.53	7.92
	Control students	17	36.29	7.59	17	34.76	7.39
	Effect Size	***d*=-0.023**			***d*=-0.031**		
	One-way ANOVA	*M*SE=59.603; *F*=0.00; *p*=0.947			*M*SE=58.665; *F*=0.01; *p*=0.929		
7th Grade (1st Year)	Charter students	19	37.05	9.46	19	31.47	7.65
	Control students	19	36.63	9.82	19	31.79	7.75
	Effect Size	***d*=0.045**			***d*=-0.043**		
	One-way ANOVA	*M*SE=92.982; *F*=0.02; *p*=0.894			*M*SE=59.275; *F*=0.02; *p*=0.900		
7th Grade (2nd Year)	Charter students	26	37.65	7.47	26	32.08	8.41
	Control students	26	37.15	7.38	26	32.46	7.90
	Effect Size	***d*=0.069**			***d*=-0.047**		
	One-way ANOVA	*M*SE=55.145; *F*=0.06; *p*=0.809			*M*SE=66.526; *F*=0.03; *p*=0.866		
7th Grade (Combined Cohorts)	Charter students	45	37.40	8.27	45	31.82	8.01
	Control students	45	36.93	8.40	45	32.18	7.75
	Effect Size	***d*=0.057**			***d*=-0.046**		
	One-way ANOVA	*M*SE=69.450; *F*=0.07; *p*=0.791			*M*SE=62.149; *F*=0.05; *p*=0.831		

Table 1. Continued

School, Grade, and Cohort	Group	Mathematics			Reading/LA		
		n	M	SD	n	M	SD
The Soulsville Charter School							
6th Grade (1st Year)	Charter students	40	38.45	7.71	40	36.20	9.75
	Control students	40	38.83	7.72	40	36.33	9.53
	Effect Size	***d*=-0.050**			***d*=-0.014**		
	One-way ANOVA	*M*SE=59.457; *F*=0.05; *p*=0.828			*M*SE=92.989; *F*=0.00; *p*=0.954		
7th Grade (1st Year)	Charter students	11	32.82	9.56	11	30.09	8.54
	Control students	11	33.64	9.45	11	30.73	7.91
	Effect Size	***d*=-0.090**			***d*=-0.082**		
	One-way ANOVA	*M*SE=90.309; *F*=0.04; *p*=0.842			*M*SE=67.755; *F*=0.03; *p*=0.858		
7th Grade (2nd Year)	Charter students	35	34.74	8.29	35	30.23	10.61
	Control students	35	35.17	8.23	35	29.94	10.54
	Effect Size	***d*=-0.053**			***d*=0.028**		
	One-way ANOVA	*M*SE=68.230; *F*=0.05; *p*=0.829			*M*SE=111.824; *F*=0.01; *p*=0.910		
7th Grade (Combined Cohorts)	Charter students	46	34.28	8.54	46	30.20	10.06
	Control students	46	34.80	8.45	46	30.13	9.90
	Effect Size	***d*=-0.062**			***d*=0.007**		
	One-way ANOVA	*M*SE=72.184; *F*=0.09; *p*=0.769			*M*SE=99.605; *F*=0.00; *p*=0.975		

Table 1. Continued

School, Grade, and Cohort	Group	Mathematics			Reading/LA		
		n	M	SD	n	M	SD
Yo! Academy							
9th Grade (1st Year)	Charter students	17	31.76	9.43			
	Control students	17	31.35	9.14			
	Effect Size	***d*=0.046**					
	One-way ANOVA	*M*SE=86.217; *F*=0.02; *p*=0.898					
10th Grade (1st Year)	Charter students				5	30.20	4.27
	Control students				5	30.20	4.27
	Effect Size				***d*=0.000**		
	One-way ANOVA				*M*SE=18.200; *F*=0.00; *p*=1.000		
10th Grade (2nd Year)	Charter students				18	28.83	7.96
	Control students				18	29.00	8.08
	Effect Size				***d*=-0.022**		
	One-way ANOVA				*M*SE=64.309; *F*=0.00; *p*=0.951		
10th Grade (Combined Cohorts)	Charter students				23	29.13	7.25
	Control students				23	29.26	7.35
	Effect Size				***d*=-0.018**		
	One-way ANOVA				*M*SE=53.296; *F*=0.00; *p*=0.952		

Table 2. Post Means, Standard Deviations, and Effect Sizes

School, Grade, and Cohort	Group	Mathematics n	Mathematics M	Mathematics SD	Mathematics Adj. M	Mathematics % Correct[1]	Reading/LA n	Reading/LA M	Reading/LA SD	Reading/LA Adj. M	Reading/LA % Correct[1]
City University											
9th Grade (1st Year)	Charter students	48	33.29	6.43	33.30	60.55					
	Control students	48	34.50	8.37	34.49	62.71					
	Effect Size	***d*=-0.164[5]**									
	Adj. Effect Size	***d*=-0.241**									
10th Grade (1st Year)	Charter students						14	41.50	6.15	42.26	76.84
	Control students						14	39.71	9.40	40.61	73.84
	Effect Size						***d*=0.234**				
	Adj. Effect Size						***d*=0.372**				
10th Grade (2nd Year)	Charter students						36	44.17	4.10	43.80	79.64
	Control students						36	43.64	6.88	43.36	78.84
	Effect Size						***d*=0.095**				
	Adj. Effect Size						***d*=0.097**				
10th Grade (Combined Cohorts)	Charter students						50	43.42	4.85	43.03	78.24
	Control students						50	42.54	7.77	41.98	76.33
	Effect Size						***d*=0.137**				
	Adj. Effect Size						***d*=0.205**				

[5] Each effect size (or d) indicates the number of standard deviations by which the charter school student mean differs from the control student mean.

Table 2. Continued

School, Grade, and Cohort	Group	Mathematics n	Mathematics M	Mathematics SD	Mathematics Adj. M	Mathematics % Correct[2]	Reading/LA n	Reading/LA M	Reading/LA SD	Reading/LA Adj. M	Reading/LA % Correct[1]
KIPP Academy Nashville											
5th Grade (1st Year)	Charter students	47	39.28	11.28	39.23	50.95	47	38.00	10.91	37.90	49.22
	Control students	47	35.06	11.27	35.11	45.60	47	35.11	11.64	35.20	45.71
	Effect Size	***d*=0.378**					***d*=0.259**				
	Adj. Effect Size	***d*=0.698****					***d*=0.390**				
6th Grade (1st Year)	Charter students	6	40.83	14.27	41.24	53.56	6	39.67	13.87	36.74	47.71
	Control students	6	41.83	18.95	42.31	54.95	6	42.33	14.00	40.07	52.04
	Effect Size	***d*=-0.065**					***d*=-0.209**				
	Adj. Effect Size	***d*=-0.174**					***d*=-0.556**				
6th Grade (2nd Year)	Charter students	35	42.63	10.60	42.49	55.18	35	42.03	10.95	42.22	54.83
	Control students	35	36.09	8.15	36.07	46.84	35	38.06	12.14	38.76	50.34
	Effect Size	***d*=0.702**					***d*=0.348**				
	Adj. Effect Size	***d*=0.983**					***d*=0.542**				
6th Grade (Combined)	Charter students	41	42.37	11.02	42.30	54.94	41	41.68	11.25	41.43	53.81
	Control students	41	36.93	10.28	37.00	48.05	41	38.68	12.33	38.94	50.57
	Effect Size	***d*=0.517**					***d*=0.257**				
	Adj. Effect Size	***d*=0.798****					***d*=0.386**				

Table 2. Continued

School, Grade, and Cohort	Group	Mathematics n	M	SD	Adj. M	% Correct[2]	Reading/LA n	M	SD	Adj. M	% Correct[1]
MAHS											
6th Grade (1st Year)	Charter students	40	41.48	7.77	41.55	53.96	40	39.28	10.44	39.34	51.09
	Control students	40	39.13	8.31	39.05	50.71	40	40.83	9.66	40.76	52.94
	Effect Size	***d*=0.296**					***d*=-0.156**				
	Adj. Effect Size	***d*=0.494***					***d*=-0.211**				
7th Grade (1st Year)	Charter students	19	43.53	12.06	43.96	57.09	19	43.63	8.37	43.08	55.95
	Control students	19	38.58	8.87	38.87	50.48	19	39.42	7.98	39.08	50.75
	Effect Size	***d*=0.480**					***d*=0.529**				
	Adj. Effect Size	***d*=0.712**					***d*=0.635**				
7th Grade (2nd Year)	Charter students	36	42.39	10.27	42.34	54.99	36	41.36	10.30	41.69	54.14
	Control students	36	43.39	10.93	43.05	55.91	36	39.17	9.86	39.31	51.05
	Effect Size	***d*=-0.096**					***d*=0.220**				
	Adj. Effect Size	***d*=-0.098**					***d*=0.372**				
7th Grade (Combined Cohorts)	Charter students	55	42.78	10.82	43.15	56.04	55	42.15	9.66	42.39	55.05
	Control students	55	41.73	10.44	40.96	53.19	55	39.25	9.18	39.19	50.90
	Effect Size	***d*=0.100**					***d*=0.311**				
	Adj. Effect Size	***d*=0.288**					***d*=0.479***				
8th Grade (1st Year)	Charter students	3	30.67	5.86	31.41	40.79	3	41.33	5.86	40.17	52.17
	Control students	3	33.67	5.86	33.60	43.64	3	41.33	9.50	39.42	51.19
	Effect Size	***d*=-0.627**					***d*=0.000**				
	Adj. Effect Size	***d*=-0.388**					***d*=0.148**				
8th Grade (2nd Year)	Charter students	9	32.89	5.84	31.82	41.32	9	40.22	6.10	38.15	49.55
	Control students	9	36.22	8.30	35.43	46.01	9	35.44	7.84	33.31	43.26
	Effect Size	***d*=-0.492**					***d*=0.722**				
	Adj. Effect Size	***d*=-0.547**					***d*=0.821**				

Table 2. Continued

School, Grade, and Cohort	Group	Mathematics n	M	SD	Adj. M	% Correct[2]	Reading/LA n	M	SD	Adj. M	% Correct[1]
MAHS											
8th Grade (3rd Year)	Charter students	17	36.71	6.15	37.15	48.25	17	36.29	7.11	37.61	48.84
	Control students	17	27.18	8.56	27.59	35.83	29	31.59	8.59	34.00	44.16
	Effect Size	***d*=1.318**					***d*=0.595**				
	Adj. Effect Size	***d*=1.410**					***d*=0.490**				
8th Grade (Combined Cohorts)	Charter students	29	34.90	6.25	34.90	45.32	29	38.03	6.82	38.04	49.40
	Control students	29	30.66	9.07	30.65	39.81	29	31.59	8.59	31.58	41.01
	Effect Size	***d*=0.554**					***d*=0.845**				
	Adj. Effect Size	***d*=0.591***					***d*=1.052*****				
8th Grade Algebra I (Combined Cohorts)	Charter students	39	37.79	4.62	38.75	50.32	39	47.13	8.44	48.21	62.61
	Control students	1502	40.59	8.37	40.56	52.68	1502	48.95	10.05	48.92	63.53
	Effect Size	***d*=-0.338**					***d*=-0.182**				
	Adj. Effect Size	***d*=-0.389**					***d*=-0.131**				
MASE											
6th Grade (1st Year)	Charter students	33	37.85	7.71	37.81	49.10	33	41.67	9.91	41.52	53.92
	Control students	33	42.03	8.55	42.07	54.64	33	40.30	10.44	40.45	52.53
	Effect Size	***d*=-0.521**					***d*=0.137**				
	Adj. Effect Size	***d*=-0.784****					***d*=0.148**				
7th Grade (1st Year)	Charter students	63	42.13	10.13	42.06	54.62	63	40.33	9.78	40.27	52.30
	Control students	63	40.90	10.37	40.97	53.21	63	38.37	10.61	38.43	49.91
	Effect Size	***d*=0.121**					***d*=0.194**				
	Adj. Effect Size	***d*=0.152**					***d*=0.243**				
8th Grade (1st Year)	Charter students	17	32.00	6.02	30.82	40.03	17	39.71	7.82	37.86	49.17
	Control students	17	37.82	8.66	36.63	47.57	17	39.29	11.93	37.74	49.01
	Effect Size	***d*=-0.804**					***d*=0.043**				
	Adj. Effect Size	***d*=-0.844**					***d*=0.017**				

Table 2. Continued

School, Grade, and Cohort	Group	Mathematics n	M	SD	Adj. M	% Correct[2]	Reading/LA n	M	SD	Adj. M	% Correct[1]
MASE											
8th Grade (2nd Year)	Charter students	54	30.69	9.16	31.09	40.38	54	40.02	8.75	40.55	52.66
	Control students	54	34.09	8.24	34.43	44.71	54	34.93	8.65	35.47	46.06
	Effect Size	***d*=-0.394**					***d*=0.591**				
	Adj. Effect Size	***d*=-0.478**					***d*=0.712**				
8th Grade (Combined Cohorts)	Charter students	71	31.00	8.49	30.96	40.21	71	39.94	8.48	39.00	50.65
	Control students	71	34.96	8.43	35.53	46.14	71	35.97	9.63	36.61	47.55
	Effect Size	***d*=-0.471**					***d*=0.441**				
	Adj. Effect Size	***d*=-0.557****					***d*=0.286**				
8th Grade Algebra I (Combined Cohorts)	Charter students	49	37.08	6.02	40.03	51.99	49	50.24	4.98	52.33	67.96
	Control students	1492	40.63	8.35	40.53	52.64	1492	48.86	10.14	48.79	63.36
	Effect Size	***d*=-0.429**					***d*=0.138**				
	Adj. Effect Size	***d*=-0.108**					***d*=0.655*****				
9th Grade (1st Year)	Charter students	12	37.75	5.69	36.58	66.51					
	Control students	12	38.92	8.15	37.72	68.58					
	Effect Size	***d*=-0.174**									
	Adj. Effect Size	***d*=-0.185**									
9th Grade (2nd Year)	Charter students	5	30.00	3.29	31.44	57.16					
	Control students	5	36.60	5.55	37.84	68.80					
	Effect Size	***d*=-1.617**									
	Adj. Effect Size	***d*=-1.151**									
9th Grade (3rd Year)	Charter students	8	31.50	4.81	32.65	59.36					
	Control students	8	36.75	6.48	37.73	68.60					
	Effect Size	***d*=-0.984**									
	Adj. Effect Size	***d*=-0.865**									

Table 2. Continued

School, Grade, and Cohort	Group	Mathematics n	Mathematics M	Mathematics SD	Mathematics Adj. M	Mathematics % Correct[2]	Reading/LA n	Reading/LA M	Reading/LA SD	Reading/LA Adj. M	Reading/LA % Correct[1]
MASE											
9th Grade (Combined Cohorts)	Charter students	25	34.28	5.93	34.30	62.36					
	Control students	25	37.76	7.01	37.74	68.62					
	Effect Size	***d*=-0.547**									
	Adj. Effect Size	***d*=-0.585***									
10th Grade (1st Year)	Charter students						8	41.75	4.71	42.69	77.62
	Control students						8	41.50	5.76	42.80	77.82
	Effect Size						***d*=0.051**				
	Adj. Effect Size						***d*=-0.024**				
10th Grade (2nd Year)	Charter students						1	41.00	NA	43.03	78.24
	Control students						1	39.00	NA	40.63	73.87
	Effect Size						**NA**				
	Adj. Effect Size						**NA**				
10th Grade (3rd Year)	Charter students						8	44.00	5.21	42.89	77.98
	Control students						8	43.38	7.13	42.44	77.16
	Effect Size						***d*=0.106**				
	Adj. Effect Size						***d*=0.098**				
10th Grade (4th Year)	Charter students						55	44.38	5.27	44.33	80.60
	Control students						55	41.95	6.86	41.90	76.18
	Effect Size						***d*=0.401**				
	Adj. Effect Size						***d*=0.501**				
10th Grade (Combined Cohorts)	Charter students						72	44.00	5.17	43.97	79.95
	Control students						72	42.01	6.66	42.04	76.44
	Effect Size						***d*=0.336**				
	Adj. Effect Size						***d*=0.402***				

Table 2. Continued

School, Grade, and Cohort	Group	Mathematics n	M	SD	Adj. M	% Correct[2]	Reading/LA n	M	SD	Adj. M	% Correct[1]
Memphis Business Academy											
6th Grade (1st Year)	Charter students	17	40.82	10.50	40.91	53.13	17	39.94	9.58	40.06	52.03
	Control students	17	40.06	7.64	39.97	51.91	17	40.71	9.16	40.58	52.70
	Effect Size	***d*=0.085**					***d*=-0.085**				
	Adj. Effect Size	***d*=0.149**					***d*=-0.086**				
7th Grade (1st Year)	Charter students	19	44.47	10.47	44.67	58.01	19	41.16	10.05	41.55	53.96
	Control students	19	40.53	12.11	41.02	53.27	19	38.26	10.48	38.55	50.06
	Effect Size	***d*=0.358**					***d*=0.290**				
	Adj. Effect Size	***d*=0.551**					***d*=0.434**				
7th Grade (2nd Year)	Charter students	26	44.27	9.31	43.84	56.94	26	37.81	9.37	37.62	48.86
	Control students	26	42.35	10.51	42.27	54.90	26	39.46	10.02	39.15	50.84
	Effect Size	***d*=0.197**					***d*=-0.173**				
	Adj. Effect Size	***d*=0.236**					***d*=-0.220**				
7th Grade (Combined Cohorts)	Charter students	45	44.36	9.70	44.25	57.47	45	39.22	9.70	39.59	51.42
	Control students	45	41.58	11.12	41.65	54.09	45	38.96	10.12	38.85	50.45
	Effect Size	***d*=0.269**					***d*=0.027**				
	Adj. Effect Size	***d*=0.384**					***d*=0.104**				

Table 2. Continued

School, Grade, and Cohort	Group	Mathematics n	M	SD	Adj. M	% Correct[2]	Reading/LA n	M	SD	Adj. M	% Correct[1]
The Soulsville Charter School											
6th Grade (1st Year)	Charter students	40	44.53	11.83	44.66	58.00	40	44.68	11.27	44.75	58.12
	Control students	40	39.78	9.62	39.64	51.48	40	41.80	11.11	41.73	54.19
	Effect Size	***d*=0.446**					***d*=0.261**				
	Adj. Effect Size	***d*=0.623****					***d*=0.452***				
7th Grade (1st Year)	Charter students	11	46.36	13.56	47.88	62.18	11	37.73	12.00	38.44	49.92
	Control students	11	39.45	12.05	40.18	52.18	11	35.27	11.19	35.30	45.84
	Effect Size	***d*=0.565**					***d*=0.222**				
	Adj. Effect Size	***d*=0.968**					***d*=0.447**				
7th Grade (2nd Year)	Charter students	35	45.60	10.57	45.42	58.99	35	40.40	10.48	40.28	52.31
	Control students	35	41.60	12.06	40.18	52.18	35	37.17	11.37	37.05	48.12
	Effect Size	***d*=0.358**					***d*=0.300**				
	Adj. Effect Size	***d*=0.640**					***d*=0.445**				
7th Grade (Combined Cohorts)	Charter students	46	45.78	11.20	46.65	60.58	46	39.76	10.79	39.36	51.12
	Control students	46	41.09	11.96	40.63	52.77	46	36.71	11.24	36.17	46.97
	Effect Size	***d*=0.409**					***d*=0.280**				
	Adj. Effect Size	***d*=0.623****					***d*=0.374**				

Table 2. Continued

School, Grade, and Cohort	Group	Mathematics n	Mathematics M	Mathematics SD	Mathematics Adj. M	Mathematics % Correct[1]	Reading/LA n	Reading/LA M	Reading/LA SD	Reading/LA Adj. M	Reading/LA % Correct[1]
Yo! Academy											
9th Grade (1st Year)	Charter students	17	32.24	6.12	32.12	58.40					
	Control students	17	37.71	8.48	37.82	68.76					
	Effect Size	***d*=-0.762**									
	Adj. Effect Size	***d*=-1.122****									
10th Grade (1st Year)	Charter students						5	38.60	3.58	37.90	68.91
	Control students						5	41.00	5.00	40.30	73.27
	Effect Size						***d*=-0.617**				
	Adj. Effect Size						***d*=-0.615**				
10th Grade (2nd Year)	Charter students						18	39.67	7.73	39.92	72.58
	Control students						18	40.00	6.59	40.14	72.98
	Effect Size						***d*=-0.047**				
	Adj. Effect Size						***d*=-0.052**				
10th Grade (Combined Cohorts)	Charter students						23	39.43	6.98	39.48	71.78
	Control students						23	40.22	6.19	40.17	73.04
	Effect Size						***d*=-0.122**				
	Adj. Effect Size						***d*=-0.165**				

[1] Based on adjusted mean

* p < .05

** p < .01

*** p < .001

Table 3. Chi-square Test Results

School, Grade, and Cohort	Subject Area	Group	Below Proficient		Proficient		Advanced		Chi Square	Chi Square (P/F)	% PA
			n	%	*n*	%	*n*	%			
City University											
9th Grade (1st Year)	Algebra I	Charter students	12	25.00	30	62.50	6	12.50	5.620	0.827	75.0
		Control students	16	33.33	19	39.58	13	27.08			66.7
10th Grade (1st year)	English II	Charter students	0	0.00	3	21.43	11	78.57	2.200	2.154	100.0
		Control students	2	14.29	3	21.43	9	64.29			85.7
10th Grade (2nd year)	English II	Charter students	0	0.00	4	11.11	32	88.89	1.548	1.014	100.0
		Control students	1	2.78	6	16.67	29	80.56			97.2
10th Grade (Combined Cohorts)	English II	Charter students	0	0.00	7	14.00	43	86.00	3.559	3.093	100.0
		Control students	3	6.00	9	18.00	38	76.00			94.0
KIPP Academy Nashville											
5th Grade (1st year)	Math	Charter students	7	14.9	27	57.4	13	27.7	1.791	0.646	85.1
		Control students	10	21.3	29	61.7	8	17.0			78.7
	Reading/LA	Charter students	1	2.1	34	72.3	12	25.5	1.182	1.044	97.9
		Control students	3	6.4	34	72.3	10	21.3			93.6
6th Grade (1st year)	Math	Charter students	1	16.7	4	66.7	1	16.7	3.133	0.444	83.3
		Control students	2	33.3	1	16.7	3	50.0			66.7
	Reading/LA	Charter students	1	16.7	4	66.7	1	16.7	0.476	0.000	83.3
		Control students	1	16.7	3	50.0	2	33.3			83.3
6th Grade (2nd year)	Math	Charter students	2	5.7	23	65.7	10	28.6	4.662	0.215	94.3
		Control students	3	8.6	29	82.9	3	8.6			91.4
	Reading/LA	Charter students	3	8.6	22	62.9	10	28.6	0.576	0.565	91.4
		Control students	5	14.3	21	60.0	9	25.7			85.7

Table 3. Continued

School, Grade, and Cohort	Subject Area	Group	Below Proficient *n*	Below Proficient %	Proficient *n*	Proficient %	Advanced *n*	Advanced %	Chi Square	Chi Square (P/F)	% PA
KIPP Academy Nashville											
6th Grade (Combined)	Math	Charter students	3	7.3	27	65.9	11	26.8	2.129	0.554	92.7
		Control students	5	12.2	30	73.2	6	14.6			87.8
	Reading/LA	Charter students	4	9.8	26	63.4	11	26.8	0.480	0.456	90.2
		Control students	6	14.6	24	58.5	11	26.8			85.4
MAHS											
6th Grade (1st year)	Math	Charter students	2	5.00	32	80.00	6	15.00	0.106	0.000	95.0
		Control students	2	5.00	33	82.50	5	12.50			95.0
	Reading/LA	Charter students	4	10.00	29	72.50	7	17.50	0.750	0.721	90.0
		Control students	2	5.00	30	75.00	8	20.00			95.0
7th Grade (1st year)	Math	Charter students	3	15.79	9	47.37	7	36.84	5.738	1.118	84.2
		Control students	1	5.26	16	84.21	2	10.53			94.7
	Reading/LA	Charter students	0	0.00	13	68.42	6	31.58	1.310	NA[1]	100.0
		Control students	0	0.00	16	84.21	3	15.79			100.0
7th Grade (2nd year)	Math	Charter students	3	8.33	23	63.89	10	27.78	1.414	1.059	91.7
		Control students	1	2.78	22	61.11	13	36.11			97.2
	Reading/LA	Charter students	1	2.78	23	63.89	12	33.33	2.229	1.934	97.2
		Control students	4	11.11	23	63.89	9	25.00			88.9
7th Grade (Combined Cohorts)	Math	Charter students	6	10.91	32	58.18	17	30.91	2.639	2.157	89.1
		Control students	2	3.64	38	69.09	15	27.27			96.4
	Reading/LA	Charter students	1	1.82	36	65.45	18	32.73	3.120	1.886	98.2
		Control students	4	7.27	39	70.91	12	21.82			92.7

Table 3. Continued

School, Grade, and Cohort	Subject Area	Group	Below Proficient		Proficient		Advanced		Chi Square	Chi Square (P/F)	% PA
			n	%	*n*	%	*n*	%			
MAHS											
8th Grade (1st year)	Math	Charter students	1	33.33	2	66.67	0	0.00	1.200	1.200	66.7
		Control students	0	0.00	3	100.00	0	0.00			100.0
	Reading/LA	Charter students	0	0.00	2	66.67	1	33.33	0.000	NA[1]	100.0
		Control students	0	0.00	2	66.67	1	33.33			100.0
8th Grade (2nd year)	Math	Charter students	1	11.11	8	88.89	0	0.00	2.286	0.000	88.9
		Control students	1	11.11	6	66.67	2	22.22			88.9
	Reading/LA	Charter students	0	0.00	8	88.89	1	11.11	0.400	NA[1]	100.0
		Control students	0	0.00	7	77.78	2	22.22			100.0
8th Grade (3rd year)	Math	Charter students	0	0.00	16	94.12	1	5.88	7.926*	7.286**	100.0
		Control students	6	35.29	11	64.71	0	0.00			64.7
	Reading/LA	Charter students	0	0.00	15	88.24	2	11.76	3.476	3.290	100.0
		Control students	3	17.65	13	76.47	1	5.88			82.4
8th Grade (Combined Cohorts)	Math	Charter students	2	6.90	26	89.66	1	3.45	3.894	3.288	93.1
		Control students	7	24.14	20	68.97	2	6.90			75.9
	Reading/LA	Charter students	0	0.00	25	86.21	4	13.79	3.192	3.164	100.0
		Control students	3	10.34	22	75.86	4	13.79			89.7
8th Grade Algebra I (Combined Cohorts)	Math	Charter students	0	0.00	27	69.23	12	30.77	20.130***	4.962*	100.0
		Control students	170	11.32	531	35.35	801	53.33			88.7
	Reading/LA	Charter students	0	0.00	13	33.33	26	66.67	0.665	0.526	100.0
		Control students	20	1.33	453	30.16	1029	68.51			98.7

Table 3. Continued

School, Grade, and Cohort	Subject Area	Group	Below Proficient		Proficient		Advanced		Chi Square	Chi Square (P/F)	% PA
			n	%	*n*	%	*n*	%			
MASE											
6th Grade (1st year)	Math	Charter students	3	9.09	27	81.82	3	9.09	4.320	1.065	90.9
		Control students	1	3.03	23	69.70	9	27.27			97.0
	Reading/LA	Charter students	2	6.06	22	66.67	9	27.27	0.749	0.733	93.9
		Control students	4	12.12	21	63.64	8	24.24			87.9
7th Grade (1st year)	Math	Charter students	6	9.52	44	69.84	13	20.63	0.429	0.321	90.5
		Control students	8	12.70	41	65.08	14	22.22			87.3
	Reading/LA	Charter students	4	6.35	43	68.25	16	25.40	2.271	1.474	93.7
		Control students	8	12.70	44	69.84	11	17.46			87.3
8th Grade (1st year)	Math	Charter students	0	0.00	17	100.00	0	0.00	3.290	1.030	100.0
		Control students	1	5.88	14	82.35	2	11.76			94.1
	Reading/LA	Charter students	0	0.00	15	88.24	2	11.76	6.908*	2.125	100.0
		Control students	2	11.76	8	47.06	7	41.18			88.2
8th Grade (2nd year)	Math	Charter students	16	29.63	34	62.96	4	7.41	3.862	3.429	70.4
		Control students	8	14.81	43	79.63	3	5.56			85.2
	Reading/LA	Charter students	2	3.70	35	64.81	17	31.48	6.953*	0.706	96.3
		Control students	4	7.41	44	81.48	6	11.11			92.6

Table 3. Continued

School, Grade, and Cohort	Subject Area	Group	Below Proficient		Proficient		Advanced		Chi Square	Chi Square (P/F)	% PA
			n	%	*n*	%	*n*	%			
MASE											
8th Grade (Combined Cohorts)	Math	Charter students	16	22.54	51	71.83	4	5.63	2.404	2.379	77.5
		Control students	9	12.68	57	80.28	5	7.04			87.3
	Reading/LA	Charter students	2	2.82	50	70.42	19	26.76	3.164	2.119	97.2
		Control students	6	8.45	52	73.24	13	18.31			91.6
8th Grade Algebra I (Combined Cohorts)	Math	Charter students	6	12.24	26	53.06	17	34.69	7.166*	0.076	87.8
		Control students	164	10.99	532	35.66	796	53.35			89.0
	Reading/LA	Charter students	0	0.00	9	18.37	40	81.63	4.298	0.666	100.0
		Control students	20	1.34	457	30.63	1015	68.03			98.7
9th Grade (1st year)	Algebra I	Charter students	0	0.00	7	58.33	5	41.67	1.077	1.044	100.0
		Control students	1	8.33	6	50.00	5	41.67			91.7
9th Grade (2nd year)	Algebra I	Charter students	1	20.00	4	80.00	0	0.00	2.000	1.111	80.0
		Control students	0	0.00	4	80.00	1	20.00			100.0
9th Grade (3rd year)	Algebra I	Charter students	3	37.50	5	62.50	0	0.00	3.000	1.333	62.5
		Control students	1	12.50	5	62.50	2	25.00			87.5
9th Grade (Combined Cohorts)	Algebra I	Charter students	4	16.00	16	64.00	5	20.00	1.391	0.758	84.0
		Control students	2	8.00	15	60.00	8	32.00			92.0
10th Grade (1st year)	English II	Charter students	0	0.00	3	37.50	5	62.50	0.291	NA[1]	100.0
		Control students	0	0.00	2	25.00	6	75.00			100.0
10th Grade (2nd year)	English II	Charter students	0	0.00	0	0.00	1	100.00	NA[1]	NA[1]	100.0
		Control students	0	0.00	0	0.00	1	100.00			100.0
10th Grade (3rd year)	English II	Charter students	0	0.00	2	25.00	6	75.00	0.000	NA[1]	100.0
		Control students	0	0.00	2	25.00	6	75.00			100.0
10th Grade (4th year)	English II	Charter students	0	0.00	8	14.55	47	85.45	3.875	1.009	100.0
		Control students	1	1.82	15	27.27	39	70.91			98.2
10th Grade (Combined Cohorts)	English II	Charter students	0	0.00	13	18.06	59	81.94	2.566	1.007	100.0
		Control students	1	1.39	19	26.39	52	72.22			98.6

Table 3. Continued

School, Grade, and Cohort	Subject Area	Group	Below Proficient *n*	Below Proficient %	Proficient *n*	Proficient %	Advanced *n*	Advanced %	Chi Square	Chi Square (P/F)	% PA
Memphis Business Academy											
6th Grade (1st Year)	Math	Charter students	3	17.65	9	52.94	5	29.41	5.167	1.133	82.4
		Control students	1	5.88	15	88.24	1	5.88			94.1
	Reading/LA	Charter students	2	11.76	12	70.59	3	17.65	2.154	2.125	88.2
		Control students	0	0.00	14	82.35	3	17.65			100.0
7th Grade (1st year)	Math	Charter students	1	5.26	11	57.89	7	36.84	2.181	2.073	94.7
		Control students	4	21.05	10	52.63	5	26.32			79.0
	Reading/LA	Charter students	0	0.00	13	68.42	6	31.58	1.091	1.027	100.0
		Control students	1	5.26	13	68.42	5	26.32			94.7
7th Grade (2nd year)	Math	Charter students	0	0.00	18	69.23	8	30.77	3.559	3.184	100.0
		Control students	3	11.54	14	53.85	9	34.62			88.5
	Reading/LA	Charter students	2	7.69	19	73.08	5	19.23	0.227	0.221	92.3
		Control students	3	11.54	18	69.23	5	19.23			88.5
7th Grade (Combined Cohorts)	Math	Charter students	1	2.22	29	64.44	15	33.33	5.006	4.939*	97.8
		Control students	7	15.56	24	53.33	14	31.11			84.4
	Reading/LA	Charter students	2	4.44	32	71.11	11	24.44	0.730	0.714	95.6
		Control students	4	8.89	31	68.89	10	22.22			91.1

Table 3. Continued

School, Grade, and Cohort	Subject Area	Group	Below Proficient *n*	Below Proficient %	Proficient *n*	Proficient %	Advanced *n*	Advanced %	Chi Square	Chi Square (P/F)	% PA
The Soulsville Charter School											
6th Grade (1st Year)	Math	Charter students	6	15.00	16	40.00	18	45.00	10.661*	0.457	85.0
		Control students	4	10.00	30	75.00	6	15.00	*		90.0
	Reading/LA	Charter students	2	5.00	21	52.50	17	42.50	3.662	0.213	95.0
		Control students	3	7.50	28	70.00	9	22.50			92.5
7th Grade (1st year)	Math	Charter students	1	9.09	5	45.45	5	45.45	1.952	0.386	90.9
		Control students	2	18.18	7	63.64	2	18.18			81.8
	Reading/LA	Charter students	2	18.18	7	63.64	2	18.18	0.000	0.000	81.8
		Control students	2	18.18	7	63.64	2	18.18			81.8
7th Grade (2nd year)	Math	Charter students	3	8.57	18	51.43	14	40.00	1.630	0.159	91.4
		Control students	4	11.43	22	62.86	9	25.71			88.6
	Reading/LA	Charter students	1	2.86	26	74.29	8	22.86	1.984	1.939	97.2
		Control students	4	11.43	23	65.71	8	22.86			88.6
7th Grade (Combined Cohorts)	Math	Charter students	4	8.70	23	50.00	19	41.30	3.226	0.449	91.3
		Control students	6	13.04	29	63.04	11	23.91			87.0
	Reading/LA	Charter students	3	6.52	33	71.74	10	21.74	1.143	1.108	93.5
		Control students	6	13.04	30	65.22	10	21.74			87.0

Table 3. Continued

School, Grade, and Cohort	Subject Area	Group	Below Proficient		Proficient		Advanced		Chi Square	Chi Square (P/F)	% PA
			n	%	*n*	%	*n*	%			
Yo! Academy											
9th Grade (1st Year)	Algebra I	Charter students	6	35.29	9	52.94	2	11.76	3.778	0.567	64.7
		Control students	4	23.53	6	35.29	7	41.18			76.5
10th Grade (1st Year)	English II	Charter students	0	0.00	3	60.00	2	40.00	1.667	NA[1]	100.0
		Control students	0	0.00	1	20.00	4	80.00			100.0
10th Grade (2nd year)	English II	Charter students	1	5.56	7	38.89	10	55.56	1.067	1.029	94.5
		Control students	0	0.00	8	44.44	10	55.56			100.0
10th Grade (Combined Cohorts)	English II	Charter students	1	4.35	10	43.48	12	52.17	1.207	1.022	95.7
		Control students	0	0.00	9	39.13	14	60.87			100.0

[1] No statistic is computed because the proficiency (2 levels) is a constant (both levels are equal).

* $p < .05$

** $p < .01$

*** $p < .001$