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MONTGOMERY COUNTY PUBLIC SCHOOLS, ROCKVILLE, MARYLAND

An Examination of the Impact of the George B. Thomas, Sr. Learning Academy - Saturday School Program in Montgomery County Public Schools

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Executive Summary

An examination of the impact of the George B. Thomas, Sr. Learning Academy - Saturday School in Montgomery County Public Schools (MCPS) was conducted by the Office of Shared Accountability. MCPS has been collaborating with the organization for over 25 years to provide supplemental academic supports to MCPS students in the areas of reading and mathematics. Demographic characteristics of students who participated in Saturday School during the 2016-17 are included in this report. Additionally, academic outcomes for participants compared to nonparticipants were examined and are detailed in this report.

The following research questions were examined:

1. What are the demographic characteristics of students who participated in Saturday School during the 2016-2017 school year?
2. What percent of students who participated in Saturday School had high attendance in the program?
3. To what extent did Saturday School participants meet academic attainment aligned to the MCPS Evidence of Learning Framework in literacy and mathematics?
4. Is there a difference between Saturday School and non-Saturday School participants with comparable demographic profile on academic outcomes?

Summary of Methodology

Descriptive and inferential statistical analyses were conducted to answer the aforementioned research questions. Specifically, analyses of covariance (ANCOVA) and effect sizes were used to estimate the effect of Saturday School on student outcomes – research question 4. To statistically control for the nonequivalence of the Saturday School participants with those in the comparison group and to isolate the effects of the program, propensity score analysis was used that included recipient of Free and Reduced-Priced Meals System, underrepresented group membership – being African American/Black or Hispanic/Latino, and prior achievement. With ANCOVA, the extent to which mean differences on academic outcomes were statistically significant was examined. Outcome measures examined for research question 4 included Measures of Academic Progress (MAP), PARCC, Marking Period Average (MPA), and Grade Point Average (GPA).

Summary of Findings

What are the demographic characteristics of students who participated in Saturday School during the 2016-2017 school year?

Close to 2,500 MCPS students participated in Saturday School during the 2016-2017 school year. An examination of the impact of the Saturday School program was examined for participants with high attendance (at least 50% session attendance) compared to a matched group of non-participating. In examining participation by race/ethnicity, 43% were African American/Black, 33% were Hispanic/Latino, 12% were Asian, 8% were White, and 3% were students from Two or More Races. Slightly more than half of the participants were recipients of Free and Reduced Meal Services (FARMS) and 33% were identified as Limited English Proficient (LEP).

What percent of students who participated in Saturday School had high attendance in the program?

Of the 2,475 Saturday School participants, 71.5% attended 50% or more of their sessions. Larger percentages of students in elementary grades attended 50% or more of the sessions compared to middle and high school participants.

To what extent did Saturday School participants meet academic attainment aligned to the MCPS Evidence of Learning Framework in literacy and mathematics?

For students in elementary grades, 67 percent met Evidence of Learning attainment in literacy and 52 percent met attainment in mathematics. Similar percentages were observed for students at the middle school level, with 67 percent meeting attainment in literacy and 53 percent meeting attainment in mathematics (see Figure 1). At the high school level, 88 percent of students met Evidence of Learning attainment in literacy and 74 percent met attainment in mathematics.

Is there a difference between Saturday School and non-Saturday School participants with comparable demographic profile on academic outcomes?

Based on statistical analysis, there was evidence of a positive impact of Saturday School on the academic outcomes for some student groups at the elementary level in both reading and mathematics. More specifically, positive impacts at the elementary level were observed in the following areas: MAP-R, MAP-M, PARCC ELA, and PARCC Math (see Table 1). No statistically significant differences were observed at the middle and high school levels.

Table 1
Summary of Performance of Saturday School Participants on Academic Outcome Measures by Level

	MAP-R	*MAP-M*	*PARCC ELA*	*PARCC Math*	*MPA/GPA*
Elementary					
Grades 3-5	♦	✓	✓	✓	
FARMS	♦	✓	♦	✓	
Underrepresented Groups	✓	✓	✓	✓	
Middle					
Grades 6-8	♦	♦	♦	♦	♦
FARMS	♦	♦	♦	♦	♦
Underrepresented Groups	♦	♦	♦	♦	♦
High					
Grades 9-12	♦	♦	♦	♦	♦
FARMS	♦	♦	♦	♦	♦
Underrepresented Groups	♦	♦	♦	♦	♦

✓ Saturday School participants performed significantly higher than nonparticipants.
× Saturday School participants performed significantly lower than nonparticipants.
♦ No significant difference between Saturday School participants and nonparticipants.

An Examination of the Impact of the George B. Thomas, Sr. Learning Academy Saturday School Program in Montgomery County Public Schools

Kecia L. Addison, Ph.D.

Background

The George B. Thomas, Sr. Learning Academy (Academy) was established in 1986 by members of the Mu Nu Chapter of Omega Psi Phi Fraternity as the Olney Saturday School. Since 1994, the Academy has provided academic enrichment opportunities to students in Montgomery County Public Schools. The George B. Thomas, Sr. Learning Academy Saturday School program is designed to assist in closing the achievement gap through acceleration of students' mastery of academics in reading, language arts, mathematics, and test-taking skills. It is designed to increase confidence and encourage students to reach for higher goals.

In partnership with Montgomery County Public Schools (MCPS), the Academy provides certified teachers to work with students and support the instruction covered during the school week for students. Support and resources provided during Saturday School are aligned with the MCPS curriculum and students have an opportunity to review concepts and homework covered during their school week. The core structure of the Saturday School program is students in grades 1 through 12 and focuses on Reading, Language Arts, Mathematics, and Test-Taking skills. Additionally, for high school students (grades 9 through 12), support is provided in core subjects of English and Math, with specialized support also offered in Biology, Physics, and Chemistry, including for preparation for Advanced Placement exams.

Purpose

The purpose of this outcome study was to analyze the impact of the Academy Saturday School program on academic performance of participants during the 2016-2017 school year. Academic outcomes (i.e., Measures of Academic Progress (MAP), PARCC, Marking Period Average (MPA), and Grade Point Average (GPA)) of students who participated in Saturday School were compared with peers from similar demographic backgrounds who did not participate, taking into account prior academic outcomes.

Methodology

Study Design

Students who participate in Saturday School are not randomly assigned to Saturday School. Due to the lack of random assignment, a quasi-experimental design (nonequivalent comparison-group design) was applied to address the research questions (Bordens & Abbott, 2008; Fraenkel & Wallen, 2009; Shadish, Cook, & Campbell, 2002). Specifically, the following research questions were examined:

1. What are the demographic characteristics of students who participated in Saturday School during the 2016-2017 school year?
2. What percent of students who participated in Saturday School had high attendance in the program?

3. To what extent did Saturday School participants meet academic attainment aligned to the MCPS Evidence of Learning Framework in literacy and mathematics?
4. Is there a difference between Saturday School and non-Saturday School participants with comparable demographic profile on academic outcomes?

Analytical Samples

Analytical samples used for each analysis varied as follows:

- For research questions 1 - 3, analyses was limited to Saturday School participants.
- For research question 4, analysis was examined for Saturday School participants and compared to students who did not participate in Saturday school.
- Outcomes for three groups of students were compared:
    a. ***Treatment group***. The treatment group will be students who had high exposure to Saturday School during the 2016-17 school year.
    b. ***Comparison group.*** Using propensity score matching, a matched sample of students similar on demographic characteristics to those who participated in Saturday School was drawn (matched on FARMS and underrepresented group member (Hispanic or African American).

Study Measures

The following measures were examined in this study:

1. ***Evidence of Learning attainment.*** The Evidence of Learning Framework was developed by MCPS during the 2017-18 school year. For the purpose of this study, Evidence of Level of attainment in the literacy and mathematics for students overall and grades 2, 5, 8, and 11 was examined.
2. ***Measures of Academic Progress (MAP).*** MAP is a computer-adaptive assessment developed by Northwest Education Association (NWEA). Scores on MAP tests are reported on a Rasch UNit (RIT) scale. In this study, mean differences in RIT scores were examined for students for both:
    a. Measures of Academic Progress - Reading (MAP-R)
    b. Measures of Academic Progress - Mathematics (MAP-M)
3. ***Partnership for Assessment of Readiness for College and Careers (PARCC)***. PARCC is a state of Maryland mandated assessment administered in the spring to students in grades 3 through 8. Scale scores are reported from PARCC assessments. Mean differences in scale score obtained for treatment and comparison groups were examined.
    a. *PARCC English/Language Arts (ELA).* Mean difference in scale score obtained on the literacy component of PARCC for students overall and grades 3, 5, and 8.
    b. *PARCC Mathematics.* Mean difference in scale score obtained on the literacy component of PARCC for students overall and grades 3, 5, 8, and 11.
4. ***Marking Period Average/Grade Point Average.*** Marking period average (MPA) is the average number of grade points earned per course. The grade point average (GPA) is the average

number of grade point earned in high school courses. The GPA is calculated by dividing the total number of grade points earned by the total number of course credits included in the computation. Mean differences in MPA and GPA were examined for middle school and high school students, respectively.

Data analysis procedures

Descriptive analyses and analyses of covariance (ANCOVA) and effect sizes were used to estimate the effect of Saturday School on student outcomes. It was hypothesized that the academic outcomes for participants from Saturday School, when adjusted for preexisting differences (Free and Reduced-price Meals System (FARMS), prior academic performance, member of an underrepresented racial/ethnic group) would better than those for similar students who did not participate in Saturday School. If the Saturday School program has the desired effect for individual students who participated, the expectation is that the academic achievement for participants will differ significantly from those of non-Saturday School participants with a similar demographic profile.

Propensity score computation. To statistically control for the nonequivalence of the Saturday School participants with those in the comparison group and to isolate the effects of the program, a propensity score was computed. Binary logistic regression was used to compute a propensity score. To draw a comparison of similar peers, Saturday School participants were matched to peers who did not attending using the propensity score. The propensity score is described as the conditional probability that a student will be enrolled in Saturday School based on an observed group of covariates, in this case by FARMS and underrepresented group membership (Lueleen, Shadish & Clark, 2005). The propensity score method allows for effectively controlling for any pre-existing differences between the two groups of students and produce less biased estimates of the impact of Saturday School. Detailed information on measures included in the propensity score matching analysis is included in Table 2.

Table 2. Measures Included in Propensity Score Matching Analysis

	Elementary	Middle	High
Demographic Characteristic	• Member of underrepresented group • FARMS recipient	• Member of underrepresented group • FARMS recipient	• Member of underrepresented group • FARMS recipient
Academic Measure	• Met 50th percentile in Spring 2016 on MAP-R • Met 50th percentile in Spring 2016 on MAP-M	• Met 50th percentile in Spring 2016 on MAP-R	• Marking Period Average (MPA) in Quarter 4 of Spring 2016

ANCOVA. Analyses of covariance (ANCOVA) for continuous outcome variables (i.e., PARCC scale score and MAP RIT scores) were conducted while simultaneously controlling for pre-existing or intervening variables through the propensity score computed (see Table 3).

Computation of effect sizes. For one-way ANCOVA, an effect size index is computed – the partial η^2. It "is interpreted as the proportion of variance of the dependent variable related to the facto, holding constant (partialling out) the covariate" (Green & Salkind, 2011). Ranging in values from 0 to 1, partial η^2 conventional cutoffs of .01, .06, and .14 are used to represent small, medium, and large effect sizes, respectively (Green & Salkind).

Outcome Measures

The outcome measures for Research Question 4 included: a) reading and mathematics test scores on MAP for students in grades 3 through 8; b) reading and mathematics scores on PARCC for students in grades 3 through 8; c) marking period average for students in grades 6 through 8; and d) grade point average for students in grades 9 through 12. Only students who had complete assessment data for both the outcome measure and the prior achievement measure were included in the analyses.

Table 3. Outcome Measures Examined by School Level

	Elementary	Middle	High
Measures of Academic Progress (MAP) – Reading			
Outcome Measure	**Spring 2017 MAP-R RIT Score**	**Spring 2017 MAP-R RIT Score**	
Prior achievement control variable	**Fall 2016 MAP-R RIT Score**	**Fall 2016 MAP-R RIT Score**	
Measures of Academic Progress (MAP) – Mathematics			
Outcome Measure	**Spring 2017 MAP-M RIT Score**	**Spring 2017 MAP-M RIT Score**	
Prior achievement control variable	**Fall 2016 MAP-M RIT Score**	**Fall 2016 MAP-M RIT Score**	
PARCC - ELA			
Outcome Measure	**Spring 2017 PARCC Scale Score**	**Spring 2017 PARCC Scale Score**	
Prior achievement control variable	**Fall 2016 MAP-R RIT Score**	**Fall 2016 MAP-R RIT Score**	
PARCC - Math			
Outcome Measure	**Spring 2017 PARCC Scale Score**	**Spring 2017 PARCC Scale Score**	
Prior achievement control variable	**Fall 2016 MAP-M RIT Score**	**Fall 2016 MAP-M RIT Score**	
Marking Period Average (MPA)/Grade Point Average (GPA)			
Outcome Measure		**Spring 2017 Marking Period 4 MPA**	**Spring 2017 GPA**
Prior achievement control variable		**Spring 2016 Marking Period 4 MPA**	**Spring 2016 Marking Period 4 MPA**

Results

Descriptive statistical analysis was used to answer research questions 1 through 3. For these questions, analyses were conducted for students who participated in Saturday School during the 2016-2017 school year. Inferential statistical analysis was used to answer research question 4 with analyses conducted for Saturday School students with high attendance compared to a matched sample of nonparticipants. Results are organized by research question.

Research Question 1: What are the demographic characteristics of students who participated in Saturday School during the 2016-2017 school year?

Demographic characteristics of participants. During the 2016-17 school year, a total of 2,475 students enrolled in MCPS schools participated in the George B. Thomas, Sr. Learning Academy, Saturday School program. The majority of participants in the Saturday School program during 2016-2017 were African American/Black and Hispanic/Latino, with 43 percent and 33 percent, respectively (see Table 1). Close to 55 percent of Saturday School participants were recipients of Free and Reduced Meal Services (FARMS), with those at the elementary level having a higher percentage than participants at the middle of high school grade levels (see Tables 4 and 5). Slightly more than 33 percent of participants were identified as LEP and 13 percent received special education services.

Table 4. Number and Percent of 2016-2017 Saturday School Participants by Demographic Characteristics

	N	%
Asian	305	12.3%
African American/Black	1058	42.7%
White	200	8.1%
Hispanic/Latino	826	33.4%
Two or More Races	78	3.2%
All Saturday School Students	2475	100.0%
FARMS	1348	54.5%
Special Ed	322	13.0%
LEP	822	33.2%

Note: Data for students identified as American Indian or Pacific Islander are not reported individually, but included in the total number of students.

Table 5. Number and Percent of 2016-2017 Saturday School Participants by School Level by Demographic Characteristics

	Elementary (K - Grade 5)		Middle (Grades 6 - 8)		High (Grades 9 - 12)	
	N	%	N	%	N	%
Asian	171	11.5	67	14.1	67	12.9
African American/Black	631	42.6	217	45.7	210	40.5
White	99	6.7	38	8.0	63	12.1
Hispanic/Latino	531	35.9	136	28.6	159	30.6
Two or More Races	43	2.9	16	3.4	19	3.7
All Saturday School Students	1481	59.8	475	19.2	519	21.0
FARMS	897	60.6	240	50.5	211	40.7
Special Ed	201	13.6	69	14.5	52	10.0
LEP	649	43.8	79	16.6	94	18.1

Note: Data for students identified as American Indian or Pacific Islander are not reported individually, but included in the total number of students.

Research Question 2: What percent of students who participated in Saturday School had high attendance in the program?

Program attendance. Of the 2,475 Saturday School participants, about 72 percent attended 50% or more of their sessions. It is important to note that attendance is calculated based on date enrolled and number of days attended from that date. Overall, session attendance was highest for students in elementary grades, followed by middle and high school grades, respectively (see Table 6).

Table 6. Number and Percent of Saturday School Participants by Attendance by Level

		Attendance		Total
		less than 50%	50% or more	
Elementary	Number	331	1150	1481
	Percent	22.3%	77.7%	100.0%
Middle	Number	164	311	475
	Percent	34.5%	65.5%	100.0%
High	Number	210	309	519
	Percent	40.5%	59.5%	100.0%
Total	Number	705	1770	2475
	Percent	28.5%	71.5%	100.0%

Research Question 3: To what extent did Saturday School participants meet academic attainment aligned to the MCPS Evidence of Learning Framework in literacy and mathematics?

Baseline Evidence of Learning attainment. To examine the academic performance of students, MCPS utilizes a multiple measures accountability system known as the Evidence of Learning Framework. Implemented during the 2016-17 school year, this framework includes multiple measures at the classroom, district, and external levels. Research has shown that use of a single achievement test as the sole measure of learning is inappropriate. Movement to the use of multiple measures in assessment systems not only provides the opportunity for assessment of the unique and diverse knowledge and skills of all students, but also allows for triangulation of performance of students in multiple content areas. The MCPS Evidence of Learning Framework includes multiple measures in the areas of literacy and mathematics. Students who meet at least two of the three measures (i.e., classroom, district, and external) are determined to have met evidence of learning attainment. Evidence of Learning Attainment, at the time of this report, was available for students in grades 1 through 12.

For students in elementary grades, 67 percent met Evidence of Learning attainment in literacy and 52 percent met attainment in mathematics. Similar percentages were observed for students at the middle school level, with 67 percent meeting attainment in literacy and 53 percent meeting attainment in mathematics (see Figure 1). At the high school level, 88 percent of students met Evidence of Learning attainment in literacy and 74 percent met attainment in mathematics.

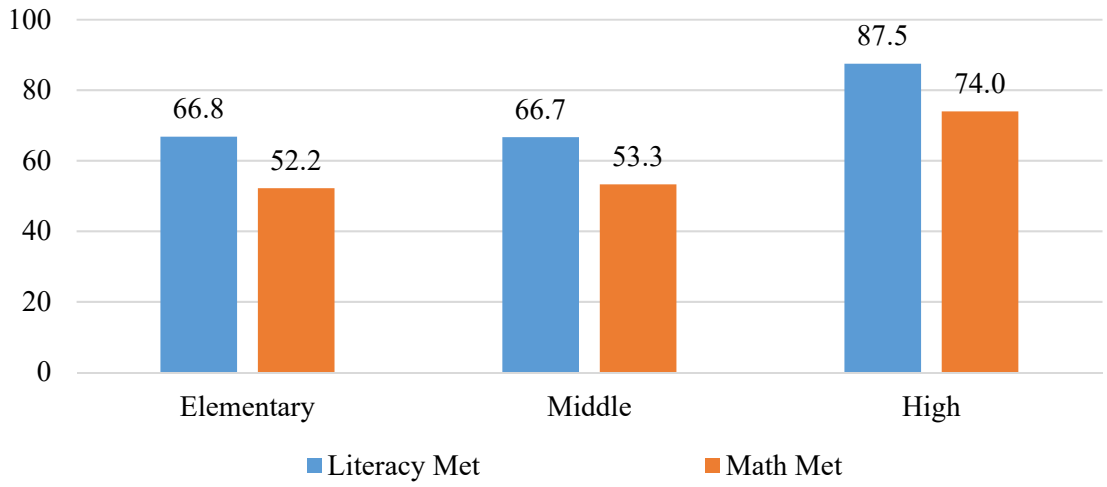

Figure 1. Percent of Saturday School participants meeting Evidence of Learning attainment in literacy and mathematics.

An examination of the performance of Saturday School participants who met EOL by program attendance showed that a higher proportion of students who attended higher than 50% of the sessions met EOL attainment in Math and Literacy (see Figures 2 and 3). Two-way contingency tables analyses were conducted to examine whether a statistical relationship existed between EOL attainment and Saturday School attendance (high attendance versus low attendance). Statistically significant differences were found in EOL attainment between students with High and Low attendance at the

middle school level for both literacy and mathematics. Statistically significant results were not found at the elementary or high school level.

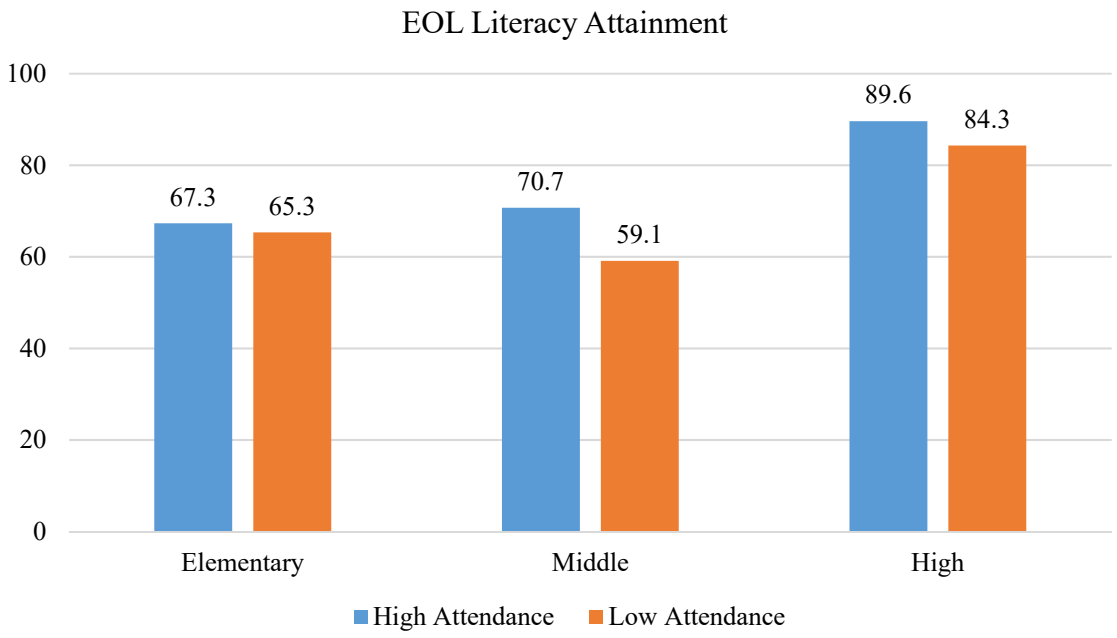

Figure 2. Percent of Saturday School participants meeting Evidence of Learning attainment in literacy.

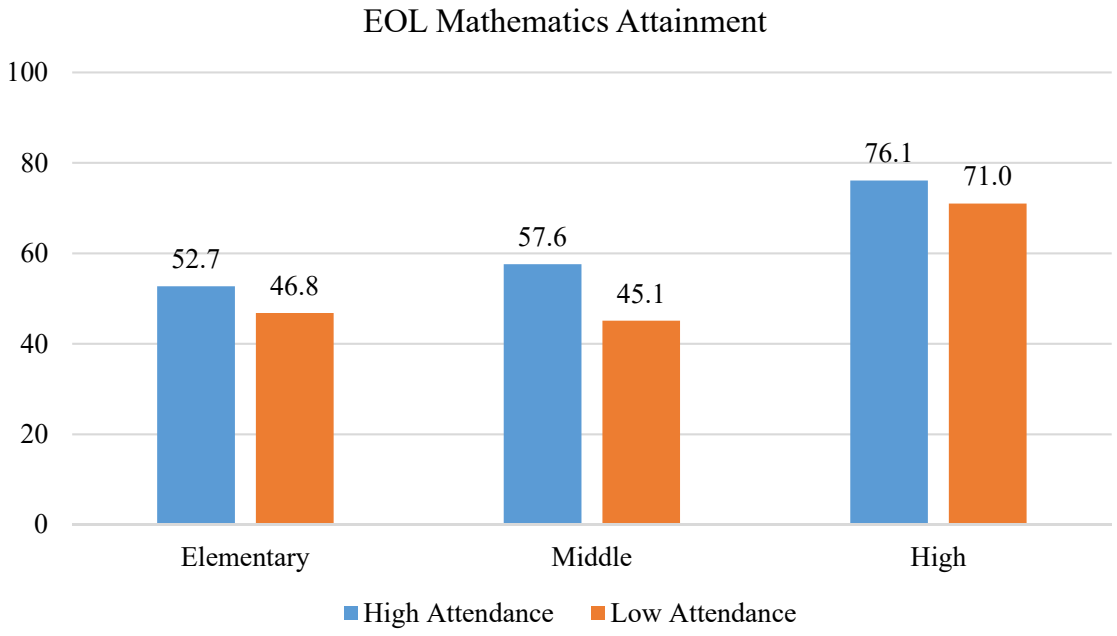

Figure 3. Percent of Saturday School participants meeting Evidence of Learning attainment in mathematics.

Research Question 4: Is there a difference between Saturday School and non-Saturday School participants with comparable demographic profile on academic outcomes?

To examine differences in academic outcomes, only the performance of students with high attendance who participated were compared the performance of a matched sample of nonparticipants.

Differences in MAP R and MAP M RIT Scores. One-way analysis of covariance (ANCOVA) was conducted to examine differences in mean MAP-R and MAP-M RIT scores for students in grade 3 through 5 (elementary) and students in grades 6 through 8 (middle). Results are presented for the elementary level first, followed by the middle school level (see Table 7 and Table 8).

Elementary MAP-R. At the elementary level, the ANCOVA was not significant for all students, $F(1,1315) = 1.77$, MSE = 66.78, $p = .18$. In examining the differences in mean MAP-R RIT scores for students in grades 3 through 5 who were recipients of FARMS, the ANCOVA was not significant, $F(1,797)=1.34$, MSE = 69.04, $p = .25$. Differences in mean MAP-R RIT scores for elementary students who were members of an underrepresented group were examined. The ANCOVA was significant, $F(1,998) = 4.17$, MSE = 68.45, $p<.05$. The strength of the relationship between participation and spring MAP R RIT scores was weak, as indicated by a partial η^2.

Middle MAP-R. At the middle school level, the ANCOVA was not significant for all students, $F(1,515) = 1.716$, MSE = 52.99, $p = .19$. In examining the differences in mean MAP-R RIT scores for students who were recipients of FARMS, the ANCOVA was not significant, $F(1,260) = .02$, MSE = 55.71, $p = .88$. Differences in mean MAP-R RIT scores for middle school students who were members of an underrepresented group were examined. The ANCOVA was not significant, $F(1,365) = .40$, MSE = 58.24, $p=.53$.

Table 7. Adjusted Mean Spring MAP-R RIT Scores for Differences in Performance Between High Attendance Saturday School and non-Saturday School Participants by Level, FARMS, and Underrepresented Group

	Saturday School Participants			Non-Saturday School Participants							
	N	Adjusted Mean	Std Error	N	Adjusted Mean	Std Error	Adjusted Mean Difference	F	Sig	Partial η^2	
Elementary											
Grades 3-5	680	205.1	.34	640	204.5	.36	.600	1.769	.184	.001	♦
FARMS	391	201.1	.52	410	200.4	.53	.681	1.343	.247	.002	♦
Underrepresented Group	511	202.8	.38	491	201.7	.40	1.073	4.171	.041	.004	✓
Middle											
Grades 6-8	282	219.7	.47	238	220.5	.50	.842	1.716	.191	.003	♦
FARMS	135	216.7	.82	129	216.8	.82	.136	.022	.883	.000	♦
Underrepresented Group	201	217.3	.54	168	217.9	.60	.509	.404	.525	.001	♦

Sig indicates the *p*-value; statistically significant adjusted mean difference if at or below the .05 level.
Partial η^2 indicates effect size with small, medium, and large cutoffs of .01, .06, and .14, respectively
✓ Saturday School participants performed significantly higher than nonparticipants.
× Saturday School participants performed significantly lower than nonparticipants.
♦ No significant difference between Saturday School participants and nonparticipants.

Elementary MAP-M. At the elementary level, the ANCOVA was significant for students in grade 3 through 5, F(1,1321) = 20.84, MSE = 54.88, p <.05. The strength of the relationship between participation and spring MAP M RIT scores was weak, as indicated by a partial η^2, with participation in Saturday School accounting for 2% of the variance in MAP-M RIT scores, holding constant fall MAP-M performance. For students in grades 3 through 5 who were recipients of FARMS, the ANCOVA was significant, F(1,798) = 24.08, MSE = 57.00, p < .05. The strength of the relationship between participation and spring MAP M RIT scores was weak, as indicated by a partial η^2, with participation in Saturday School accounting for 3% of the variance in MAP-M RIT scores. Differences in mean MAP-R RIT scores for elementary students who were members of an underrepresented group was significant, as measured by the ANCOVA, F (1,1001)=20.62, MSE = 55.51, p<.05. The strength of the relationship between participation and spring MAP M RIT scores was weak, as indicated by a partial η^2, with participation accounting for 2% of the variance.

Middle MAP-M. At the middle school level, the ANCOVA was not significant for all students, F(1,498) = .18, MSE = 61.16, p =.67. In examining the differences in mean MAP-M RIT scores for students who were recipients of FARMS, the ANCOVA was not significant, F(1,246)=.03, MSE = 80.92, p = .87. Differences in mean MAP-M RIT scores for middle school students who were members of an underrepresented group were examined and the ANCOVA was not significant, F (1,352) = .28, MSE = 67.77, p=.60.

Table 8. Adjusted Mean Spring MAP-M RIT Scores for Differences in Performance Between High Attendance Saturday School and non-Saturday School Participants by Level, FARMS, and Underrepresented Group

	Saturday School Participants			Non-Saturday School Participants							
	N	Adjusted Mean	Std Error	N	Adjusted Mean	Std Error	Adjusted Mean Difference	F	Sig	Partial η^2	
Elementary											
Grades 3-5	682	211.7	.31	639	209.8	.32	1.866	20.840	.000	.016	✓
FARMS	394	208.6	.48	408	205.0	.48	2.622	24.080	.000	.029	✓
Underrepresented Groups	514	209.3	.34	491	207.1	.36	2.143	20.620	.000	.020	✓
Middle											
Grades 6-8	272	225.4	.51	230	225.7	.54	.295	.177	.674	.000	♦
FARMS	130	221.2	1.008	120	221.0	1.00	.185	.026	.872	.000	♦
Underrepresented Groups	195	220.0	.59	161	219.5	.66	.467	.283	.595	.000	♦

Sig indicates the *p*-value; statistically significant adjusted mean difference if at or below the .05 level.
Partial η^2 indicates effect size with small, medium, and large cutoffs of .01, .06, and .14, respectively
✓ Saturday School participants performed significantly higher than nonparticipants.
× Saturday School participants performed significantly lower than nonparticipants.
♦ No significant difference between Saturday School participants and nonparticipants.

Differences in PARCC Scale Scores. Detailed results of the one-way analysis of covariance (ANCOVA) conducted to examine differences in mean scale scores for students at the elementary and

middle school levels on PARCC English/Language Arts (ELA) and PARCC Math are presented in Tables 9 and 10.

Elementary PARCC ELA. At the elementary level, the ANCOVA was significant for students in grade 3 through 5, $F(1,1319) = 4.68$, MSE = 562.51, $p < .05$. The strength of the relationship between participation and PARCC ELA scale scores was weak, as indicated by a partial η^2. For students in grades 3 through 5 who were recipients of FARMS, the ANCOVA was not significant, $F(1,799) = 1.09$, MSE = 574.20, $p = .30$. Differences in mean PARCC ELA scale scores for elementary students who were members of an underrepresented group was significant, as measured by the ANCOVA, $F(1,1002)=6.25$, MSE = 565.87, $p<.05$. The strength of the relationship between participation and PARCC ELA scale scores was weak, as indicated by a partial η^2.

Middle PARCC ELA. At the middle school level, the ANCOVA was not significant for all students, $F(1,523) = .85$, MSE = 407.33, $p = .36$. In examining the differences in mean PARCC ELA scale scores for students who were recipients of FARMS, the ANCOVA was not significant, $F(1,265)= .31$, MSE = 374.04, $p = .58$. Differences in mean PARCC ELA scale scores for middle school students who were members of an underrepresented group were examined and the ANCOVA was not significant, $F(1,371) = .59$, MSE = 405.26, $p=.44$.

Table 9. Adjusted Mean PARCC ELA Scale Scores for Differences in Performance Between High Attendance Saturday School and non-Saturday School Participants by Level, FARMS, and Underrepresented Group

	Saturday School Participants			Non-Saturday School Participants							
	N	Adjusted Mean	Std Error	N	Adjusted Mean	Std Error	Adjusted Mean Difference	F	Sig	Partial η^2	
Elementary											
Grades 3-5	682	738.6	.99	642	735.8	1.03	2.828	4.677	.031	.004	✓
FARMS	392	732.4	1.51	411	730.6	1.52	1.766	1.088	.297	.001	♦
Underrepresented Groups	513	732.5	1.08	493	728.7	1.14	3.767	6.247	.013	.006	✓
Middle											
Grades 6-8	281	738.8	1.29	247	740.4	1.35	1.624	.845	.358	.002	♦
FARMS	134	734.2	2.11	135	732.9	2.09	1.322	.314	.575	.001	♦
Underrepresented Groups	200	731.4	1.44	175	733.0	1.56	1.610	.592	.442	.002	♦

Sig indicates the *p*-value; statistically significant adjusted mean difference if at or below the .05 level.
Partial η^2 indicates effect size with small, medium, and large cutoffs of .01, .06, and .14, respectively
✓ Saturday School participants performed significantly higher than nonparticipants.
✗ Saturday School participants performed significantly lower than nonparticipants.
♦ No significant difference between Saturday School participants and nonparticipants.

Elementary PARCC Math. At the elementary level, the ANCOVA was significant for elementary students in grade 3 through 5, $F(1,1319) = 29.52$, MSE = 663.89, $p < .05$. The strength of the relationship between participation and PARCC math scale scores was weak, as indicated by a partial η^2, accounting for 2% of variance. For students in grades 3 through 5 who were recipients of FARMS, the ANCOVA was significant, $F(1,800) = 21.41$, MSE = 678.21, $p < .05$. The strength of the

relationship between participation and PARCC math scale scores was weak, as indicated by a partial η^2, with high participation accounting for 3% of the variance. Differences in mean PARCC ELA scale scores for elementary students who were members of an underrepresented group was significant, as measured by the ANCOVA, F (1,1004)=24.60, MSE = 679.95, p<.05. The strength of the relationship between participation and PARCC ELA scale scores was weak, as indicated by a partial η^2, accounting for 3% of variance.

Middle PARCC Math. The benefit of high participation in Saturday School was not found to be statistically significant on PARCC ELA for all students, FARMS recipients, and underrepresented students as detailed in Table 9.

Table 10. Adjusted Mean PARCC Math Scale Scores for Differences in Performance Between High Attendance Saturday School and non-Saturday School Participants by Level, FARMS, and Underrepresented Group

	Saturday School Participants			Non-Saturday School Participants							
	N	Adjusted Mean	Std Error	N	Adjusted Mean	Std Error	Adjusted Mean Difference	F	Sig	Partial η^2	
Elementary											
Grades 3-5	683	745.4	1.078	641	737.6	1.12	7.715	29.519	.000	.022	✓
FARMS	394	739.7	1.65	410	731.2	1.66	8.517	21.407	.000	.026	✓
Underrepresented Groups	515	739.0	1.18	493	730.8	1.25	8.180	24.600	.000	.024	✓
Middle											
Grades 6-8	277	733.8	1.19	238	733.9	1.26	.123	.006	.940	.000	♦
FARMS	133	729.2	1.98	127	725.4	1.96	3.834	2.919	.089	.011	♦
Underrepresented Groups	198	724.4	1.31	167	723.0	1.45	1.329	.475	.491	.001	♦

Sig indicates the *p*-value; statistically significant adjusted mean difference if at or below the .05 level.
Partial η^2 indicates effect size with small, medium, and large cutoffs of .01, .06, and .14, respectively
✓ Saturday School participants performed significantly higher than nonparticipants.
× Saturday School participants performed significantly lower than nonparticipants.
♦ No significant difference between Saturday School participants and nonparticipants.

Differences in Marking Period Average (MPA)/Grade Point Average (GPA). One-way analysis of covariance (ANCOVA) was conducted to examine mean differences MPA and GPA for middle school and high students, respectively (see Table 11).

Middle School MPA. For students in grades 7 and 8, FARMS recipients, and underrepresented students no statistically significant results were found (see Table 10). Thus, there were no statistically significant differences found in the quarter 4 MPA for Saturday School students in grades 7 and 8 compared to nonparticipants.

High School GPA Analysis. There were no statistically significant differences found in the GPA for Saturday School students in grades 9 through 12 compared to nonparticipants.

Table 11. Adjusted Mean MPA/GPA for Differences in Performance Between High Attendance Saturday School and non-Saturday School Participants by Level, FARMS, and Underrepresented Group

	Saturday School Participants			Non-Saturday School Participants						
	N	Adjusted Mean	Std Error	N	Adjusted Mean	Std Error	Adjusted Mean Difference	F	Sig	Partial η^2	
Middle											
Grades 7-8	145	3.03	.04	134	3.08	.04	.044	.590	.443	.002	♦
FARMS	62	2.89	.07	71	2.95	.07	.100	1.104	.295	.008	♦
Underrepresented Groups	101	2.90	.05	94	2.99	.05	.084	1.330	.250	.007	♦
High											
Grades 9-12	278	2.95	.02	273	2.89	.02	.055	2.763	.097	.005	♦
FARMS	97	2.79	.07	122	2.63	.06	.162	2.871	.092	.013	♦
Underrepresented Groups	182	2.76	.05	196	2.64	.05	.121	2.84	.093	.008	♦

Sig indicates the *p*-value; statistically significant adjusted mean difference if at or below the .05 level.
Partial η^2 indicates effect size with small, medium, and large cutoffs of .01, .06, and .14, respectively
✓ Saturday School participants performed significantly higher than nonparticipants.
× Saturday School participants performed significantly lower than nonparticipants.
♦ No significant difference between Saturday School participants and nonparticipants.

Conclusion

School districts throughout the nation are growing increasingly interested in the benefit of out-of-school-time experiences on student achievement. This increased interest is related in part to efforts aimed at closing persistent achievement gaps that exist within diverse and disadvantaged groups. As national education becomes increasingly diverse and driven by academic accountability standards, debates surrounding appropriate methods for improving the achievement of youth have escalated. MCPS continues to increase and expand opportunities for students, specifically those from underrepresented groups, to access programs designed to support academic achievement.

Historically, the children most at risk for academic failure and underachievement have been children of color. Many social, economic and political factors contribute to this reality. Research suggests that children of color tend to lack readiness skills necessary to attain basic skills in an academic environment (James, 2008; Kurjaczynski, 2004). The majority of students who participate in Saturday School are children of color. Saturday School is designed to accelerate students' mastery of academics; specifically reading, language arts, and mathematics. It hopes to help students build a strong academic foundation and positive self-esteem, as well as increase confidence and encourage students to reach for higher goals.

There were some positive effects of Saturday School observed for students at the elementary level across the measures examined. While statistically significant results were not observed at the secondary level (middle and high) or across all student groups examined at the elementary level, it is important to note that across most measures examined, mean scores were slightly higher for Saturday School participants.

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