Office of the Superintendent of Schools
MONTGOMERY COUNTY PUBLIC SCHOOLS
Rockville, Maryland

February 14, 2024

<u>MEMORANDUM</u>

To: Members of the Board of Education

From: Monique T. Felder, Interim Superintendent of Schools

Subject: Student Data/Pathway Milestone: 2022–2023 Meets or Exceeds Grade-Level or
             Course Standards in Math and English Language Arts Grades 6–8

During the December 5, 2023, discussion regarding agenda item 7.1, *Student Data/Pathway Milestone: 2022–2023 Meets or Exceeds Grade-Level or Course Standards in Math and English Language Arts Grades 6–8*, Board members requested the following information.

Question
How is it going having to cover 14 schools? What is working? What are the challenges? What kind of supports are still needed? Also, what is the plan for the math coaches? With regard to the bilingual math coach, what does the schedule look like for that coach, and what is the process schedule?

Response
The following responses are summarized from the perspective of coaches. There will be future opportunities to shadow the middle school instructional math coaches and engage in further dialogue.

How is it going having to cover 14 schools?
Specialists supporting 3 to 4 schools are more manageable than supporting 16 schools and programs; however, supporting 4 schools with consistency is challenging. The most difficult part of supporting numerous schools is creating a schedule that allows for a consistent presence at the school. Some schools have rotating blocks, and many often plan in the afternoon. The limited number of schools allows more time to be at the schools and build the positive, collaborative relationships necessary to coach and support teachers.

What is working?
The consistency and visibility in schools work in favor of building relationships where teachers trust the coaches and appreciate the support. This consistency comes not only in planning but also in the classroom and with administration. The consistent classroom presence allows for getting to know students and being able to work with them. Knowing the students provides context for sharing meaningful feedback with teachers during observations. The relationship with administration brings about support, expectations, and consistent communication with teachers. The support of administrators as instructional leaders is impactful because everyone is invested in the time that coaches are at schools to support planning, instruction, and data monitoring. The coaches' success also is connected to their own professional learning community (PLC). They work well together

and meet regularly to share strategies, resources, and challenges. Coaches also work collaboratively to elevate their successes and problem solve to overcome barriers.

What are the challenges?
When school schedules overlap or planning is switched to another day, the coach cannot support planning, and leaving meaningful feedback about instruction is challenging. This missed opportunity to be with the PLC means at least a two-week gap before attending the PLC planning. The coach's role is to support implementation of the curriculum, which happens at different levels of integrity across schools and PLCs. Competing interests, initiatives, and/or visions sometimes can impact a coach's effectiveness at a school. Additionally, some schools have staffing needs, where long-term substitutes or class coverage issues consistently make planning with teachers a challenge.

What kind of supports are still needed?
- **Time** to support teachers in curriculum study must be honored and protected.
- **Support** and communication around implementing the curriculum with integrity must continue to be elevated at all levels.
- **Funds** for substitutes to cover classes would allow teachers time to unit plan with the needed depth and an opportunity to peer observe at other schools.

What is the plan for the math coaches? With regard to the bilingual math coach, what does the schedule look like for that coach, and what is the process schedule?
There currently is not a bilingual math coach. There are four middle school instructional math coaches and an English language development coach. The English language development coach supports six schools identified as needing additional targeted support and improvement in English language development. The coach is at each school biweekly and meets with teams/departments to provide coaching, modeling, data analysis, and planning support. Following is the schedule of the coach.

Monday	Tuesday	Wednesday	Thursday	Friday
Department of English Learners and Multilingual Education (DELME) Meet Coach Plan	Argyle Middle School	Silver Spring International Middle School	Forest Oak Middle School	School visit (need based) Supervisor Check-in Coach Plan
DELME Meet Coach Plan	Newport Mill Middle School	Martin Luther King, Jr. Middle School	Odessa Shannon Middle School	School visit (need based) Supervisor Check-in Coach Plan

Question

Would like an update on summer school offerings at local schools. Ms. Yang is concerned that the system is not getting a good return on its investment in summer school offerings.

Response

Summer programs will be available at Title I and additional targeted support and improvement elementary and middle schools, emphasizing math and early learning assessment. Additionally, we will provide three regional high school programs and a central/virtual program for high school students, offering courses for graduation credit.

Question

Regarding Saturday School – Ms. Yang would like to get an understanding/evaluation of the Saturday School as it currently exists. She would like to get a better understanding of what works and what may need improving.

Response

The George B. Thomas Sr. Learning Academy, Inc. has been offering mentoring and tutoring services to Montgomery County students and families since 1986. Saturday School serves students from Grades 1–12, but also offers Kindergarten, Pre-Kindergarten, and adult literacy programs, along with other specialized programs such as Science, Technology. Engineering, and Math, and SAT prep. The most recent evaluations, *An Examination of the Impact of the George B. Thomas, Sr. Learning Academy—Saturday School Program in Montgomery County Public Schools,* were conducted in 2018 and 2019 and are attached. You also may access the reports on the website, June 2018 and October 2019.

If you have further questions, please contact Dr. Peggy A. Pugh, chief academic officer, or Ms. Niki T. Hazel, associate superintendent of curriculum and instructional programs, via email. If you have questions regarding the evaluation reports, please contact Dr. Kecia L. Addison, director of shared accountability, via email.

MTF:BJC:PAP:NTH:asj

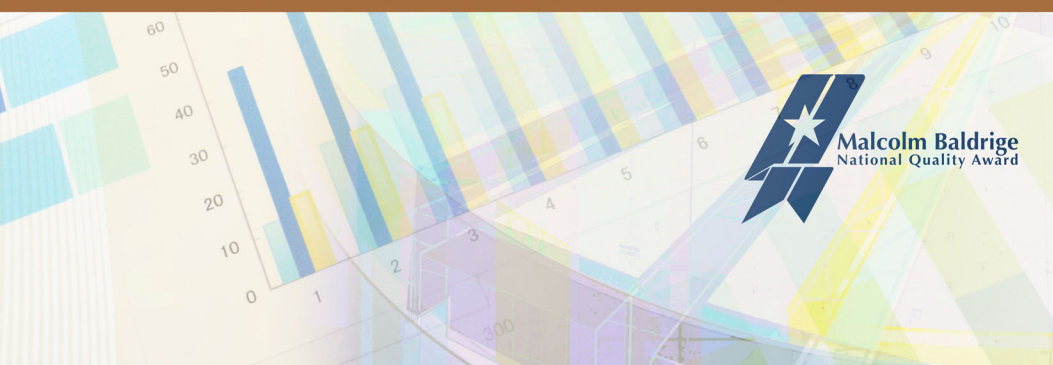Copy to:
  Executive Staff
  Dr. Addison
  Ms. Webb

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

June 2018

PREPARED BY:

Kecia L. Addison, Ph.D.

Montgomery County Public Schools

Malcolm Baldrige
National Quality Award

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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.
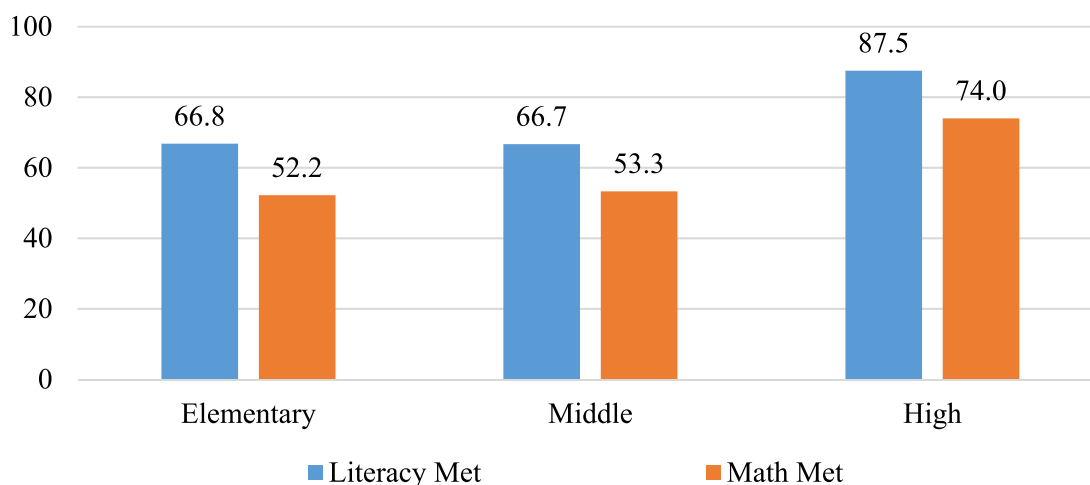
EOL Literacy Attainment
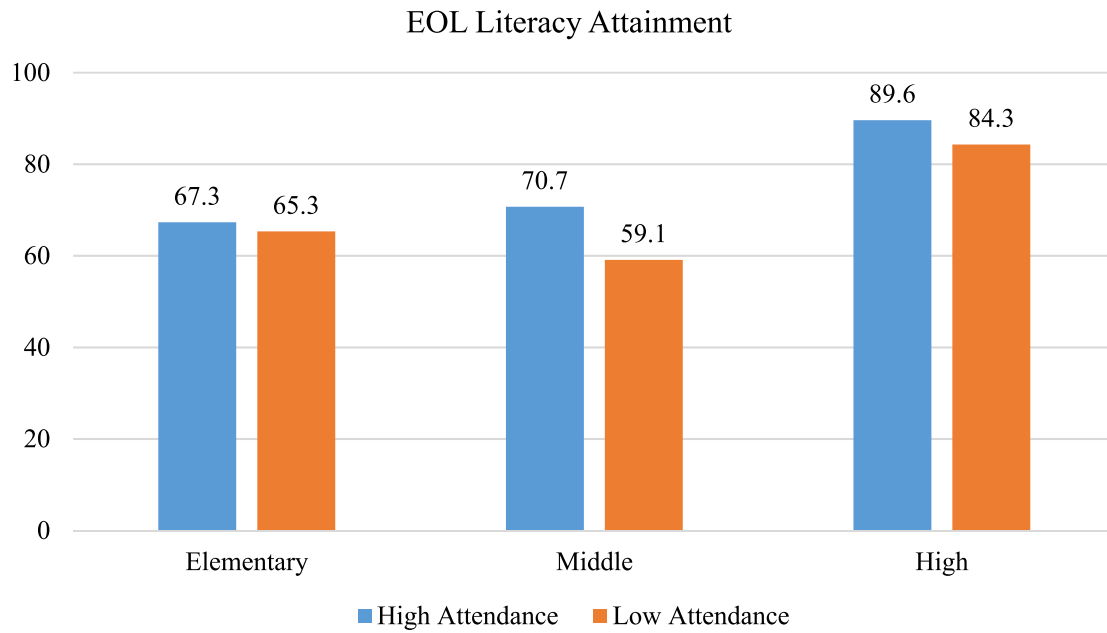

Figure 2. Percent of Saturday School participants meeting Evidence of Learning attainment in literacy.
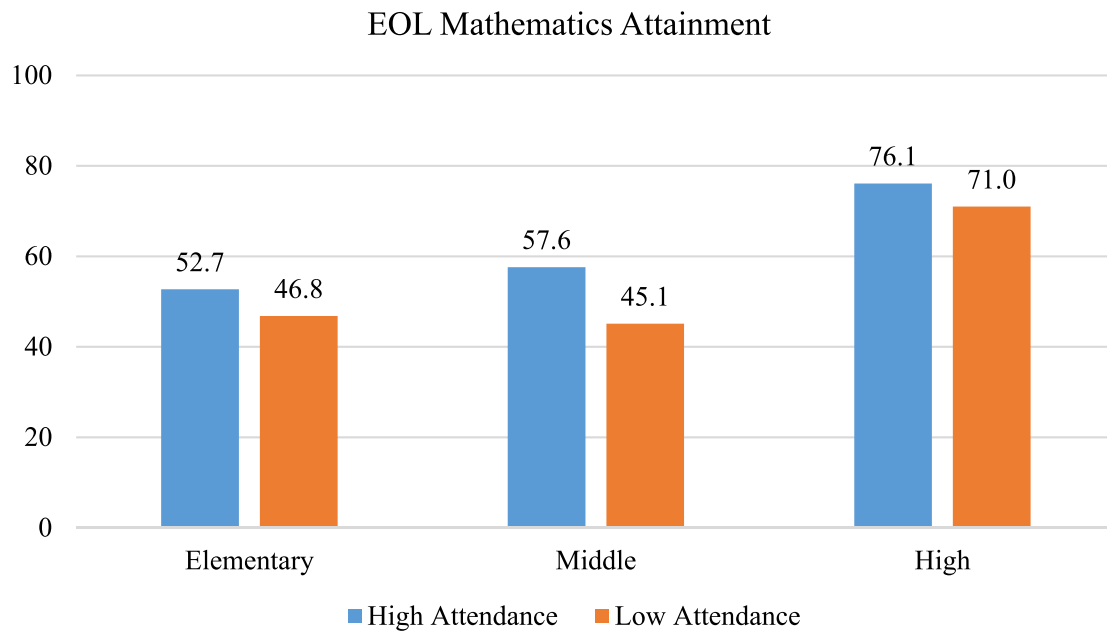
EOL Mathematics Attainment

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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An Examination of the Impact of the George B. Thomas, Sr. Learning Academy Saturday School in Montgomery County Public Schools (2018 – 2019)

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Executive Summary

The Office of Shared Accountability conduced an outcome examination of the impact of the Saturday School on student performance. The George B. Thomas, Sr. Learning Academy Saturday School aims to reduce the achievement gap through acceleration of students' mastery of reading skills, language arts, mathematics, and test taking skills. Saturday School was designed to increase students' confidence and encourage high goal setting. Demographic characteristics of students who participated in Saturday School during 2018–2019 are included. Statistical analysis to determine the impact of Saturday School on academic outcomes was compared to nonparticipants are included in this report. The following research questions were examined:

1. What are the demographic characteristics of students who participated in Saturday School during the 2018–2019 school year?
2. What percentage of students who participated in Saturday School during 2018–2019 had high attendance in the program? What was the average additional hours of instruction Saturday School students received?
3. To what extent did Saturday School participants meet Evidence of Learning attainment in literacy and mathematics?
4. Is there a difference in academic outcomes between Saturday School and Non-Saturday School participants with comparable demographic profiles?

Summary of Methodology

Descriptive and inferential statistical analyses were used to answer the research questions. The first three research questions were answered with descriptive statistics. Research question 4 utilized analyses of covariance (ANCOVA), effect sizes, and chi square analyses to estimate the effect of Saturday School outcomes on student performance. Propensity score matching was used to determine a sample of control students to statistically control for the nonequivalence between groups before Saturday School participation. The control groups and Saturday School groups were statistically similar in Free and Reduced Price Meal System (FARMS) services, race/ethnicity, and previous academic performance.

Summary of Findings

What are the demographic characteristics of students who participated in Saturday School during the 2018 - 2019 school year?

There were 2,791 Montgomery County Public School students who participated in Saturday School during 2018–2019. Black or African American students represented 43.9% of Saturday School participants, Hispanic/Latino students represented 28.5%, Asian students represented 15.7%, White students represented 7.8%, and students of two or more races represented 3.8%. Approximately half (50.3%) of all Saturday School participants were recipients of FARMS

services, 14.1% of students received special education services, and 26% of students were identified as Limited English Proficient (LEP).

What percentage of students who participated in Saturday School during 2018–2019 had high attendance in the program? What was the average additional hours of instruction Saturday School students received?

Of the 2,791 Saturday School participants, 2,389 students (85.6%) attended at least half of the Saturday School sessions. Elementary students had the highest percentage of students who attended at least half of those sessions with 87.5%, followed by high school students with 84.6%, and middle school students with 81.7%. Approximately 70% of all students who participated in Saturday School received at least 35 instructional hours from Saturday School participation. Elementary students had the highest percentage of students to receive at least 35 additional hours of instruction and high school had the lowest percentage of students to receive at least 35 instructional hours. These data indicate that majority of Saturday School participants attended at least 17 sessions of the total 22 Saturday School sessions offered.

To what extent did Saturday School participants meet Evidence of Learning attainment in literacy and mathematics?

Seventy-five percent of Saturday School elementary participants that met Evidence of Learning (EOL) literacy attainment, and 77.4% met EOL mathematics attainment. Seventy eight percent of middle school Saturday School participants met EOL literacy, and 65.4% met EOL mathematics attainment. There were 74.0% of high school Saturday School participants who met Evidence of Learning literacy attainment and 68.5% met Evidence of Learning mathematics attainment.

Is there a difference in academic outcomes between Saturday School and Non-Saturday School participants with comparable demographic profiles?

Based on statistical analyses, Saturday School participation impacted some student outcomes. At the elementary school level, there was a significant impact of Saturday School participation on students' Measures of Academic Progress (MAP) and Partnership for Assessment of Readiness for College and Careers (PARCC) scores. There was a significant relationship between Saturday School participation and MAP Reading and PARCC English Language Arts (ELA) for middle school students. At the high school level, there were no statistically significant differences in GPA or MPA for Saturday School students compared to Non-Saturday School students. (See Table 1).

Table 1
Summary of Saturday School Students' Performance on Academic Measures by Level

	MAP R	MAP M	PARCC ELA	PARCC Math	MPA/GPA	EOL Literacy	EOL Math
Elementary	✔	✘	✔	✔		✔	✔
FARMS	✔	✔	✔	✔			
Race/Ethnicity	✔	✔	✔	✔			
Middle	✔	▪	✔	▪	▪	▪	▪
FARMS	✔	✔	✔	✔	✔		
Race/Ethnicity	✔	✔	✔	✔	✔		
High					▪/✔	✔	✔
FARMS					✔/✔		
Race/Ethnicity					✔/✔		

Note. ✔ 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 (2018–2019)

Marcia L. Parrilla, Ph.D.

Background

The George B. Thomas, Sr. Learning Academy Saturday School aims to reduce the achievement gap through acceleration of students' mastery of reading skills, language arts, mathematics, and test-taking skills. Saturday School was designed to increase students' confidence and encourage high goal setting.

The George B. Thomas, Sr. Learning Academy equips certified teachers with support and resources aligned to the Montgomery County Public Schools (MCPS) curriculum to provide students an opportunity to review instruction covered during the school week. Saturday School curriculum focuses on Reading, Language Arts, Mathematics, and test-taking skills for all students. High school students are offered additional support in Biology, Physics, and Chemistry, and test-taking skills for Advanced Placement exams.

Purpose

The purpose of this outcome study was to examine the impact of Saturday School participation on students' academic outcomes for those who attended during the 2018–2019 school year. Performance of participants on Measures of Academic Progress (MAP), Partnership for Assessment of Readiness for College and Careers (PARCC), Marking Period Averages (MPA), Grade Point Averages (GPA), and Evidence of Learning (EOL) attainment were compared to students who did not participate in Saturday School.

Methodology

Study Design

Saturday School students were not randomly assigned to participation, thus a quasi-experimental (nonequivalent comparison-group) study design was applied to address the following research questions:

1. What are the demographic characteristics of students who participated in Saturday School during the 2018–2019 school year?
2. What percentage of students who participated in Saturday School during 2018–2019 had high attendance in the program? What was the average additional hours of instruction Saturday School students received?

3. To what extent did Saturday School participants meet Evidence of Learning attainment in literacy and mathematics?
4. Is there a difference in academic outcomes between Saturday School and Non-Saturday School participants with comparable demographic profiles?

Analytical Samples

Research questions 1–3 were analyzed from a sample of 2018–2019 Saturday School participants. Research question 4 was analyzed using a sample of 2018–2019 Saturday School participants that attended at least 50% of all Saturday School sessions. To address research question 4, a comparison group of Non-Saturday School participants were computed using propensity score matching.

Data analysis procedures

Descriptive statistics were used to determine the demographic characteristics and Saturday School attendance. Analyses of covariance (ANCOVA), effect sizes, and chi square analyses were used to determine the effect of Saturday School on student performance. Student performance was measured using student performance on MAP, PARCC, MPA, GPA, and EOL attainment.

ANCOVA analyses was used to accurately determine the impact of Saturday School attendance on student performance because it allows for student characteristics to be isolated that may otherwise influence academic outcomes. The independent variable for the study was Saturday School participation, and the dependent variables were spring 2019 MAP RIT scores (elementary and middle), 2019 PARCC scale scores (elementary and middle), Quarter 4 Marking Period Average (middle and high), and GPA (high school). The variables that were isolated (or covariates) were race/ethnicity and Free and Reduced Price Meal Systems (FARMS) services, and prior year's academic performance. The prior academic performance measure varied by school level. Student spring 2018 MAP Reading and Mathematics RIT scores was used for elementary students, spring 2018 MAP Reading RIT was used for middle school students, and high school students' prior performance was 2018 Quarter 4 MPA.

Chi square analysis was conducted to determine if participation in Saturday School was related to EOL attainment. Thus, the essential question determines if the probability of meeting EOL attainment is significantly different for Saturday School participants compared to students who did not attend Saturday School.

Propensity score computation. Propensity score matching is a technique used to balance research groups for statistical comparisons. Propensity scores are calculated to determine the probability that a participant will be assigned to either an experimental or control group based on a set of variables. For the current study, propensity score matching gives a probability score that a student would attend Saturday School based on race/ethnicity, FARMS services, and prior year's academic performance. Elementary student prior performance was measured using Spring 2018 MAP RIT scores (Reading and Mathematics), middle school prior academic performance was Spring 2018 MAP Reading RIT scores, and high school prior year's academic performance was 2018 Quarter 4 MPA.

Computation of effect sizes. Effect size is a magnitude measure that allows for the interpretation of strength of impact. Effect size was computed for this study to determine the weight of Saturday School significance on student performance for research question 4. Effect size includes statistical considerations, including sample size to determine significance. Effect sizes range from 0 to 1, partial η^2 conventional cutoffs are .01 (small), .06 (medium), and .14 (large) for ANCOVA analyses. Cramer's V statistic was used to estimate effect sizes for chi-square analyses.

Results

Research Question 1: What are the demographic characteristics of students who participated in Saturday School during the 2018–2019 school year?

During the 2018–2019 school year, there was a total of 2,791 students who were enrolled in The George B. Thomas, Sr. Learning Academy, Saturday School program. Overall, most of the students who participated in Saturday School were Black or African American and Hispanic/Latino, with 44 percent and 29 percent, respectively (see Table 2). Approximately half of the students who participated in Saturday School were recipients of FARMS services. Slightly less than 15 percent of students received special education services, and 26 percent of students were identified as Limited English Proficient (LEP).

Table 2
Number and Percent of Saturday School Students by Student Group

Student Group	n	%
Asian	438	15.7
Black or African American	1225	43.9
White	217	7.8
Hispanic/Latino	796	28.5
Two or More Races	107	3.8
Total Saturday School	2791	100
FARMS	1405	50.3
Special Education	394	14.1
LEP	727	26.0

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

School Level. Elementary students who attended Saturday School represented approximately half of all student participants (58.0%), middle school students represented 22.9%, and high school students represented 19.1%. At all school levels, underrepresented racial/ethnic group member students (i.e., Black or African American and Hispanic/Latino) represented majority of the students enrolled in Saturday School. A little more than half of the students enrolled in Saturday School at the elementary level (55.8%) were recipients of FARMS services. There was approximately a 10 percent point difference in FARMS students among elementary, middle, and

high school with 45.2% FARMS students in middle school, and 40% in high school. Across levels, students receiving special education services represented no more than 15% of the total students enrolled in Saturday School, and most of the students receiving LEP services were at the elementary level (34.5%) (See Table 3).

Table 3
Number and Percent of Saturday School Students by Student Group and School Level

Student Group	Elementary		Middle		High	
	n	%	n	%	n	%
Asian	252	15.6	113	17.7	73	13.7
Black or African American	720	44.5	275	43.0	230	43.2
White	105	6.5	51	8.0	61	11.4
Hispanic/Latino	481	29.7	168	26.3	147	27.6
Two or More Races	53	3.3	32	5.0	22	4.1
Total Saturday School	1618	58.0	640	22.9	533	19.1
FARMS	903	55.8	289	45.2	213	40.0
Special Education	240	14.8	95	14.8	59	11.1
LEP	558	34.5	103	16.1	66	12.4

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 percentage of students who participated in Saturday School during 2018–2019 had high attendance in the program? What was the average additional hours of instruction Saturday School students received?

There were a total of 22 Saturday School sessions during the 2018–2019 school year. Each Saturday School session included an hour of reading instruction and an hour of mathematics instruction. Thus, there was an opportunity for participants to receive 44 additional hours of the MCPS curriculum in mathematics and reading if an individual attended all 22 sessions.

The majority of students who participated in Saturday School attended at least half of all sessions throughout the school year. Elementary students had the highest percentage (87.5%) of students who attended at least 11 Saturday School sessions. Middle and high school students who attended at least 11 sessions were 81.7% and 84.6%, respectively (See Table 4).

Table 4
Number and Percent of Saturday School Students by Attendance and School Level

School Level	Less than 50%		50% or More	
	n	%	n	%
Elementary	203	12.5	1415	87.5
Middle	117	18.3	523	81.7
High	82	15.4	451	84.6
Total	402	14.4	2389	85.6

The majority (70.4%) of students received at least 35 instructional hours during Saturday School participation. The highest percentage of students receiving at least 35 instructional hours was at the elementary school level (73.8%), and the lowest percentage were at the high school level (63.4%). These statistics indicate that students who attended at least half of total Saturday School sessions were more likely to have attended at least 17 of the 22 sessions (See Table 5).

Table 5
Number and Percent of Additional Instructional Hours by School Level

School Level	0 – 14 Hours		15 – 24 Hours		25 – 34 Hours		35 – 44 Hours	
	n	%	n	%	n	%	n	%
Elementary	99	6.1	151	9.3	174	10.8	1194	73.8
Middle	49	7.7	84	13.1	75	11.7	432	67.5
High	44	8.3	61	11.4	90	16.9	338	63.4
Total	192	6.9	296	10.6	339	12.1	1964	70.4

Research Question 3: To what extent did Saturday School participants meet Evidence of Learning attainment in literacy and mathematics?

As displayed in Table 6, the majority of students who were enrolled in Saturday School met EOL in Literacy and Math. Approximately 75% of students in elementary, middle, and high school met EOL in Literacy. There were about 77% of students at the elementary school level meeting EOL in mathematics, at least 65% at the middle school level, and 70% of all high school students also met EOL mathematics. (See Table 6).

Table 6
Number and Percent of Saturday School Students who Met Evidence of Learning by Attendance

School Level	Literacy		Mathematics	
	n	%	n	%
Elementary	1186	74.8	1227	77.4
Less than 50% Attendance	136	68.7	142	71.7
50% or More Attendance	1050	75.7	1085	78.2
Middle	489	78.4	408	65.4
Less than 50% Attendance	83	72.8	68	59.6
50% or More Attendance	406	79.6	340	66.7
High	454	85.8	371	70.1
Less than 50% Attendance	66	80.5	43	52.4
50% or More Attendance	388	86.8	328	73.4

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

To examine differences in academic outcomes, the performance of students with high attendance (at least 50%) who attended Saturday School was compared to the performance of a matched sample of students who did not attend Saturday School. Results are presented in the following order: elementary and middle school MAP and PARCC results, followed by high school GPA analysis. Lastly, Evidence of Learning analysis will be presented at all school levels.

Elementary School Students (Grades 3 – 5). A one-way analysis of covariance (ANCOVA) was conducted to examine differences in average MAP RIT and PARCC scale scores for students in Grades 3–5.

MAP Reading. There was a significant impact of Saturday School participation on Spring 2019 MAP Reading scores, $F (1, 1757) = 5.30$, $p = .02$, $\eta^2 = .003$. Students who participated in Saturday School had an average spring 2019 MAP Reading score of 205.25 ($SD = 16.35$) compared to students who did not participated in Saturday School ($M = 202.81$, $SD = 20.35$). There were also significant relationships among the covariates (FARMS and race/ethnicity) with students' Spring MAP Reading scores.

MAP Mathematics. There was a significant difference in Spring MAP Mathematics scores between Saturday School and Non-Saturday School students, $F (1, 2305) = 103.63$, $p < .01$, $\eta^2 = .04$. Students who participated in Saturday School had a lower Spring MAP Mathematics average ($M = 202.35$, $SD = 23.71$) compared to students who did not participate in Saturday School ($M = 211.51$, $SD = 23.07$). There was also a significant relationship between FARMS and MAP Mathematic scores.

PARCC ELA. There was a significant impact of Saturday School participation on students' PARCC ELA scale scores, $F (1, 1749) = 18.68$, $p < .01$, $\eta^2 = .01$. Students who attended Saturday School had a higher PARCC ELA average ($M = 742.11$, $SD = 37.67$) compared to Non-Saturday School students ($M = 733.66$, $SD = 37.70$). There were also significant relationships between students' PARCC ELA scale scores and student group characteristics (FARMS and race/ethnicity).

PARCC Math. There was a significant difference in PARCC Math scale score based on Saturday School participation, $F (1, 1755) = 44.03$, $p < .01$, $\eta^2 = .02$. Students who attended Saturday School had an average PARCC Math scale score of 746.84 ($SD = 33.30$) compared to students who did not attend Saturday School ($M = 735.34$, $SD = 36.03$). There was also a significant impact of student group characteristics (FARMS and race/ethnicity) on students' PARCC Math scale scores. See Table 7.

Table 7
Adjusted Mean Spring MAP and PARCC Scores for Differences in Performance Between Elementary High Attendance Saturday School and Elementary Non-Saturday School Participants.

	Saturday School Students (N = 1396)		Non-Saturday School Students (N = 952)					
	Adjusted Mean	Std. Error	Adjusted Mean	Std. Error	Adjusted Mean Difference	F	p	η^2
MAP R	204.99	.62	203.04	.58	1.97	5.30	.02	.003
MAP M	202.05	.61	211.94	.75	-9.89	103.63	<.01	.04
PARCC ELA	741.54	1.24	734.17	1.17	7.37	18.68	<.01	.01
PARCC Math	746.26	1.14	735.86	1.08	10.40	44.03	<.01	.02

Middle School Students (Grades 6–8). A one-way analysis of covariance (ANCOVA) was conducted to measure the impact of Saturday School on middle school students' Spring MAP RIT scores, PARCC scale scores, and Marking Period Averages (See Table 8).

MAP Reading. There was a significant effect of Saturday School on students' MAP Reading scores, F (1, 1100) = 4.54, p =.03, η^2 = .003. Middle school students who attended Saturday School had an average MAP Reading score of 217.48 (SD = 15.36) compared to students who did not attend Saturday School (M = 217.08, SD = 15.67). There was a significant relationship among students' FARMS status, race/ethnicity, and Spring MAP R. This significant relationship indicates student group characteristics are also accountable for differences in scores.

MAP Mathematics. There was no significant effect of Saturday School participation on students' MAP Math scores, F (1, 1099) = 1.40, p = .24. There was a significant relationship among MAP M scores and student group characteristics -- FARMS, F (1, 1099) = 164.74, $p < .01$ and race/ethnicity, F (1, 1099) = 37.19, $p < .01$.

PARCC English Language Arts. There was a significant difference in PARCC ELA scores based on Saturday School participation, F (1, 1110) = 6.72, $p < .01$, η^2 = .05. Students who participated in Saturday School had an average PARCC ELA scale score of 736.87 (SD = 34.42) compared to the 736.89 average (SD = 34.89) scale score of students who did not participate in Saturday School. There was also a significant effect of race/ethnicity and FARMS on students' PARCC ELA scale scores.

PARCC Math. There was no significant impact of Saturday School participation on students' PARCC Math scale scores, F (1, 1112) = 2.44, p = .12. Saturday School students had an average PARCC Math scale score of 730.39 (SD = 28.57) compared to students who did not participate in Saturday School (M = 728.61, SD = 31.32). There was also a significant impact of race/ethnicity and FARMS on students' PARCC Math scores.

Quarter 4 MPA. There was no significant differences in students' Quarter 4 MPAs based on Saturday School participation, F (1, 1114) = .30, p = .58. Students who attended Saturday School had an average 3.04 (SD = .78) MPA and students who did not attend Saturday school had an average 2.92 (SD = .78) MPA. There were significant effects of FARMS and race/ethnicity.

Table 8
Adjusted Mean Spring MAP and PARCC Scores for Differences in Performance Between Middle High
Attendance Saturday School and Elementary Non-Saturday School Participants.

	Saturday School Students (N = 1396)		Non-Saturday School Students (N = 952)					
	Adjusted Mean	Std. Error	Adjusted Mean	Std. Error	Adjusted Mean Difference	*F*	*p*	η²
MAP R	216.24	.65	218.13	.60	-1.89	4.54	.03	.004
MAP M	221.68	.79	222.95	.72	-1.27	1.40	.24	.00
PARCC ELA	734.08	1.45	739.22	1.32	-5.14	6.72	.01	.006
PARCC Math	727.97	1.25	730.64	1.14	-2.68	2.44	.12	.002
Quarter 4 MPA	2.99	.03	2.96	.03	.02	.30	.58	.00

High School (Grades 9–12). To measure the impact of Saturday School on high school students' GPA and MPAs, an ANCOVA was used to analyze student data (See Table 9).

End of Year Grade Point Average. Saturday School participation had a marginally statistically significant impact on students' GPA, $F(1, 939) = 3.42$, $p = .07$, $\eta^2 = .004$. Students who participated in Saturday School had an average GPA of 3.13 (*SD* = .64) compared to the 2.99 average (*SD* = .80) GPA of Non-Saturday School students. There was a significant impact of race/ethnicity and FARMS on GPA.

Quarter 4 MPA. Saturday School participation did not have a statistically significant impact on students' Quarter 4 MPA, $F(1, 903) = 1.36$, $p = .25$. Saturday School students had an average MPA of 2.82 (*SD* = .90) compared to Non-Saturday School students (*M* = 2.69, *SD* = 1.05). There was a significant impact of both FARMS and race/ethnicity on students' MPA.

Table 9
Adjusted Mean Spring MAP and PARCC Scores for Differences in Performance Between High School
High Attendance Saturday School and Elementary Non-Saturday School Participants.

	Saturday School Students (N = 1396)		Non-Saturday School Students (N = 952)					
	Adjusted Mean	Std. Error	Adjusted Mean	Std. Error	Adjusted Mean Difference	*F*	*p*	η²
GPA	3.10	.03	3.02	.03	.08	3.42	.07	.004
Quarter 4 MPA	2.79	.05	2.72	.05	.07	1.36	.24	.001

EOLvidence of Learning. Two way contingency tables were conducted to determine if Saturday School participation was related to Evidence of Learning attainment in literacy and mathematics.

The two variables were Saturday School (participant or nonparticipant) and Evidence of Learning attainment (met or did not meet).

Literacy. There was a significant association between Saturday School participation and Evidence of Learning literacy attainment for elementary students, Pearson χ^2 (1, $N = 2327$) =12.23, p < .001, Cramer's V = .07. The probability of being a Saturday School participant (75.7%) and meeting EOL literacy attainment was significantly higher than not participating in Saturday School (69.1%) and meeting EOL literacy attainment. Closer examination of the Cramer's V effect size reveals that Saturday School had a small effect on EOL literacy attainment. At the middle school level, there was not a significant association between Saturday School participation and EOL literacy attainment, Pearson χ^2 (1, $N = 1118$) = 1.42, $p = .23$, Cramer's V = .04. There was a significant association at the high school level between Saturday School participation and EOL literacy attainment, Pearson χ^2 (1, N = 906) = 2.82, p = .09, Cramer's V = .06. The probability of being a Saturday School participant (86.8%) and meeting EOL literacy attainment was significantly higher than not participating in Saturday School (82.8%) and meeting EOL literacy attainment. Interpretation of the Cramer's V indicate that the Saturday School effect on EOL literacy attainment is small.

Mathematics. There was a significant association between Saturday School participation and EOL mathematics attainment for elementary students χ^2 (1, $N = 2325$) = 61.09, $p < .001$, Cramer's V = .16. The probability of being a Saturday School participant (78.2%) and meeting EOL mathematics attainment was significantly higher than not participating in Saturday School (63.4%) and meeting EOL mathematics attainment. Closer examination of the Cramer's V statistics reveals that Saturday School had a small to medium effect on EOL mathematics attainment. At the middle school level, there was not a significant association between Saturday School participation and EOL mathematics attainment, Pearson χ^2 (1, $N = 1118$) = 2.27, $p = .14$, Cramer's V = .05. There was a significant association of Saturday School participation and EOL mathematics at the high school level, Pearson χ^2 (1, $N = 906$) = 4.56, $p = .03$, Cramer's V = .07. The probability of being a Saturday School participant (73.4%) and meeting EOL mathematics attainment was significantly higher than not participating in Saturday School (66.9%) and meeting EOL mathematics attainment.

Discussion

Montgomery County Public School's Office of Shared Accountability conducted an outcome study to determine the effectiveness of the Saturday School partnership with The George B. Thomas, Sr. Learning Academy. Student data at all school levels was analyzed to determine the impact on students' Measures of Academic Progress (MAP), Partnership for Assessment of Readiness for College and Careers (PARCC), Evidence of Learning attainment, and GPA and MPA for the 2018–2019 school year. Statistical analyses determined that Saturday School attendance was significantly related to students' outcomes at all school levels. Evidence of Learning data revealed that majority of students who participated in Saturday School also successfully met Evidence of Learning in literacy and mathematics. Saturday School participation positively influenced the probability that elementary and high school students would meet Evidence of Learning in literacy and mathematics.