Maryland's Largest School District **MONTGOMERY COUNTY PUBLIC SCHOOLS** Expanding Opportunity and Unleashing Potential

## Tutoring Outcomes Evaluation: 2022–2023

June 2023



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Shared Accountability
Applied Research and Evaluation



## REDUCE REPURPOSE EUSE





# Tutoring: 2022-2023



Evaluation Scope	In 2021–2022, MCPS launched a districtwide tutoring and intervention instructional response plan to mitigate learning disruptions due to the CC in 2023–2023. Participating students received tutoring or evidence-based the evaluation was to determine participant characteristics of all MCPS assess the effect of MCPS-provided tutoring on student academic outcor
Methods	A quasi-experimental design was used to examine the effect of the tuto and mathematics. To investigate effects, the analyses compared studer MCPS-provided tutoring to a matched comparison group of students wh treatment groups were matched on demographics and baseline perform accounted for in the outcome analysis. The study used student-level de tutoring subject.
Results	<ul> <li>Broadly, in year two of evaluation and consistent with 2021-2022 fine effective overall at improving student reading or mathematics performance</li> <li>Overall for students in Grades K-2, participation in MCPS-provided performance on the spring 2023 reading assessment. No overall effects of https://www.achievement.</li> <li>There were also no overall effects of MCPS-provided mathematics tuto achievement.</li> </ul>

tion program as one of the six components of an COVID-19 pandemic. The district continued the program ed interventions with MCPS employees. The purpose of S tutoring and intervention program participants and to omes.

toring program on spring 2023 achievement in reading ents in kindergarten (K) through Grade 8 who received who did not participate in tutoring. The comparison and mance from fall 2022. Baseline performance was also data to examine students' academic progress in their

## ndings, MCPS-provided tutoring was not found to be ance.

ed tutoring for reading was associated with lower effect was found on Grades 3–8 students' literacy

toring evident for Grades K-8 students' mathematics

## Tutoring: 2022–2023



Results disaggregated by grade, race/ethnicity, and service group revealed mixed effects of MCPS-provided tutoring on student reading and mathematics performance. These effects ranged from trivial to small in magnitude.

MCPS-provided tutoring in reading was associated with lower reading performance for White students in Grades K-2 compared to matched comparison non-participants.

For mathematics tutoring, results revealed a significant positive effect on the performance of students receiving special education services. Participants receiving special education services scored higher, on average, than the matched comparison students on the mathematics assessment. In contrast, Asian participants saw relatively poor mathematics performance.

Additionally, few students received high dosage tutoring. Of the 5,943 students who participated in MCPS-provided tutoring in reading or mathematics during the 2022–2023 school year, only 9% (916) of them received 50 or more sessions of tutoring in either subject. For the small group of students who received high dosage tutoring in either subject, significant positive effects were observed for Grade 3 student reading and mathematics performance overall and for Black or African American students' mathematics performance, with participants outperforming the matched comparison non-participants on spring 2023 assessments.

Conclusion

Results

(Continued)

Consistent with findings from 2021–2022, mathematics tutoring continues to yield positive, albeit small, effects on the mathematics performance of students receiving special education services. Less promising are the continued negative effect on White students' K-2 reading performance and the lack of positive overall effects for either reading or mathematics tutoring.

In the 2022–2023 year of implementation, the expected outcomes of the tutoring program were still not evident. High dosage tutoring and tutoring as a regular part of the school day for all students, as factors characteristic of more effective tutoring initiatives (see Guryan et al., 2023; Robinson et al., 2021; Nickow et al., 2020) were not evident in 2021-2022 or 2022-2023 and may have contributed to the patterns observed in the past two evaluations.



With 2021–2022 funding from the American Rescue Plan Elementary and Secondary School Emergency Relief (ARP ESSER) Fund, MCPS launched an instructional response plan with the goal of mitigating learning disruptions created by the COVID-19 pandemic. A districtwide tutoring and intervention program was one of the six components of the instructional response plan and has continued through the 2022–2023 school year. Evidence-based interventions are provided by MCPS employees and tutoring services are provided by MCPS employees as well as external providers—FEV Tutor and Tutor Me Education.

This year-two report provides a descriptive overview of the 2022–2023 MCPS tutoring and intervention program's participant characteristics. It also provides the results of an outcomes analysis examining the effects of MCPS-provided tutoring on student literacy and mathematics achievement.

#### **Purpose of Evaluation**

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The purpose of the evaluation was to 1) determine K–12 participant characteristics for all MCPS tutoring and intervention program participants, and 2) assess the effects of MCPS-provided tutoring on Grades K-8 student academic outcomes in literacy and mathematics.



Student-level data were used to examine students' academic achievement in their respective tutoring subject.

What were the characteristics of MCPS-provided tutoring participants and what percentage received high-dosage tutoring in mathematics and literacy?



What effect did MCPS-provided tutoring have on the literacy and mathematics achievement of students in Grades K-8?

## **Research Questions**



Local schools delivered in-person tutoring and intervention services with qualified MCPS teachers and staff members during the school day and after or before regular school hours. Tutoring services aligned to grade-level curriculum and were provided outside the school day to students with declines in achievement. The intent of the tutoring program was to provide high-dosage tutoring to identified students (McKnight, 2022). High dosage tutoring is defined as, "one-on-one tutoring or tutoring in very small groups at least three times a week, or for about 50 hours over a semester," (Sawchuk, 2020, para. 4). MCPS employees also provided academic support to low-achieving students through evidence-based interventions. Students participated in the interventions during the school day.

#### **Program Goals**

The goals of the tutoring and intervention program were as follows:



Maximize student engagement.



Address learning recovery needs.



Accelerate learning to achieve grade-level standards.

#### **Program Components**



Tutoring provided by MCPS employees that is designed to support grade-level curriculum outside the school day.



Tutoring provided by MCPS employees during the school day using evidence-based interventions.

## Overview



To examine the effects of MCPS-provided tutoring on students' spring 2023 academic outcomes in literacy and mathematics, this evaluation employed a quasiexperimental design in which tutoring participants were matched with similar students who did not participate in tutoring. To match participants from Grades K through 8 to non-participating students, this evaluation used prior achievement, grade level, gender, race/ethnicity, and service receipt-i.e., Free and Reducedprice Meal System (FARMS), English Language Development (ELD), and Special Education—as matching variables.

## **Baseline Measures and Matching** Variables



## Data & Measures

- Baseline Measures were prior year achievement in reading and mathematics as measured by:
  - Beginning of Year (BOY) 2022-2023 DIBELS (Dynamic Indicators of Basic Early Literacy Skills; Grades K-2) Composite scale score (200 - 332 +)
  - Fall 2022 Measures of Academic Progress in Mathematics (MAP-M; Grades K-8) and Reading (MAP-R; Grades 3-8) Rasch UnIT (RIT) scale score (100-350)
- Matching Variables:
  - Prior year achievement in reading and mathematics
  - Grade level
  - Gender
  - Race/ethnicity
  - Special services receipt (i.e., FARMS, ELD, special education)

## **Outcome Measures**



- **Data & Measures**
- Reading:



- Sample
  - participants (n=10,749)

## Overview

Mathematics: Spring 2023 MAP-M (Grades K-8)

• End of Year (EOY) 2022-2023 DIBELS (Grades K-2) Composite scale score (200-450+)

Spring 2023 MAP-R (Grades 3−8) RIT scale score (100−350)

• Research Question 1: All Grades K-12 tutoring and intervention

• Research Questions 2 and 3:

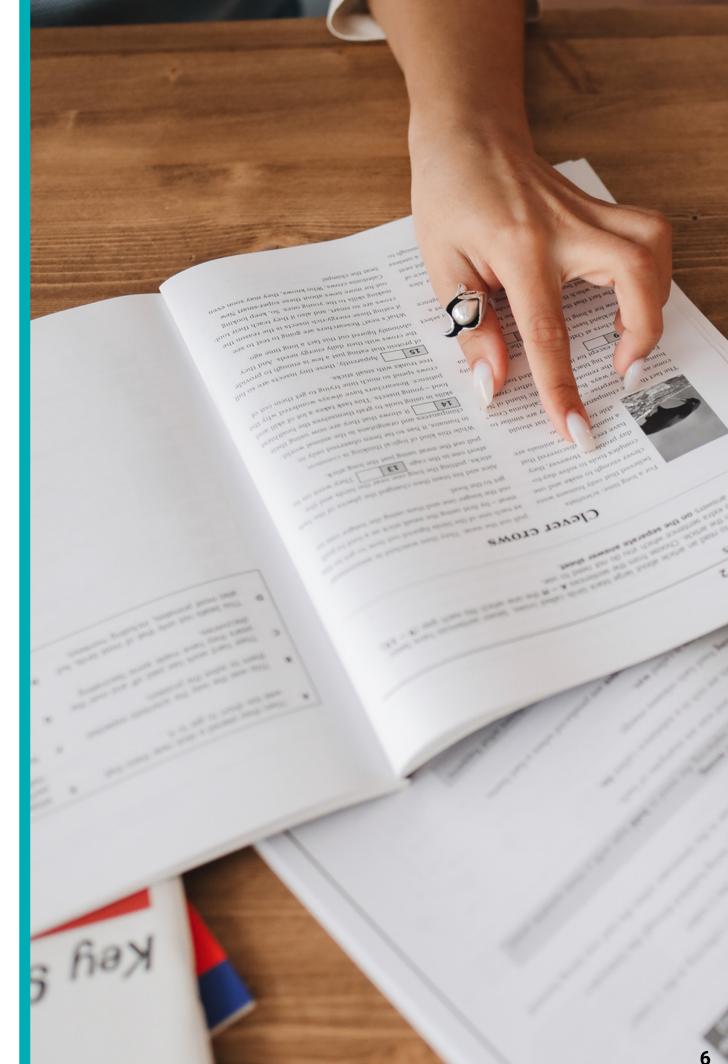
• Analysis of standardized testing performance: Reading: Grades K-8 participants (n=2,063) and matched comparison students (n=2,075) with appropriate MAP-R or DIBELS data. Mathematics: Grades K-8 participants (n=2,614) and matched comparison students (n=2,599) with appropriate MAP-M data.

 The treatment groups were composed of students who (1) participated only in MCPS-provided tutoring during the 2022-2023 school year and not evidence-based interventions, (2) received ELA or mathematics tutoring, and (3) had fall 2022 and spring 2023 MAP or DIBELS data.



## Analysis

- Research Question 1:
  - Descriptive statistics were used to summarize the percentage of students who participated in the tutoring and intervention program, participant characteristics, and tutoring dosage.
- Research Question 2:
  - An analysis of covariance (ANCOVA) was used to test the adjusted mean differences in MAP-R and MAP-M RIT scores and DIBELS composite scores between tutoring participants and the matched comparison group, accounting for prior year same subject student performance.
    - For conciseness in data visualizations, all aggregate-level significant and non-significant effects are depicted in the report, but for results disaggregated by grade, race/ethnicity, or service receipt, only significant effects are depicted.
- Hedges' *g* was used as the effect size measure. The thresholds used for interpreting Hedges' g were: 0.1 indicates a very small effect, 0.2 indicates a small effect, 0.5 indicates a medium effect, and 0.8 indicates a large effect. Effect sizes below 0.1 are considered extremely small and may not be of practical educational significance.
- To ease interpretation of effect sizes, effects are also reported as changes in percentile rank. Changes in percentile rank were computed using the Cohen's  $U_3$  improvement index formula (see What Works Clearinghouse, 2022). The computed values provide the expected percentile-point change for an average (50th percentile) comparison student who participates in tutoring. For example, an effect of tutoring at g = .25 is equivalent to moving a student from the 50th to the 60th percentile of achievement on MAP.
  - Translating effect sizes into percentile rank changes is a common approach for interpreting the practical significance of an effect (Kraft, 2019). Further, achievement percentiles are commonly used as a frame of reference for understanding MAP performance (see Northwest Evaluation Association, 2020).





### **Total Number of Participants - 10,749**

Tutoring Type	Number of Students
MCPS-Provided Tutoring	7,553 (70%)
Evidence-Based Interventions	2,460 (23%)
Other Academic Tutoring/ Interventions	1,793 (17%)
MCPS-Provided Tutoring and Evidence-Based Interventions	236
MCPS-Provided Tutoring, Evidence- Based Interventions, and Other	12

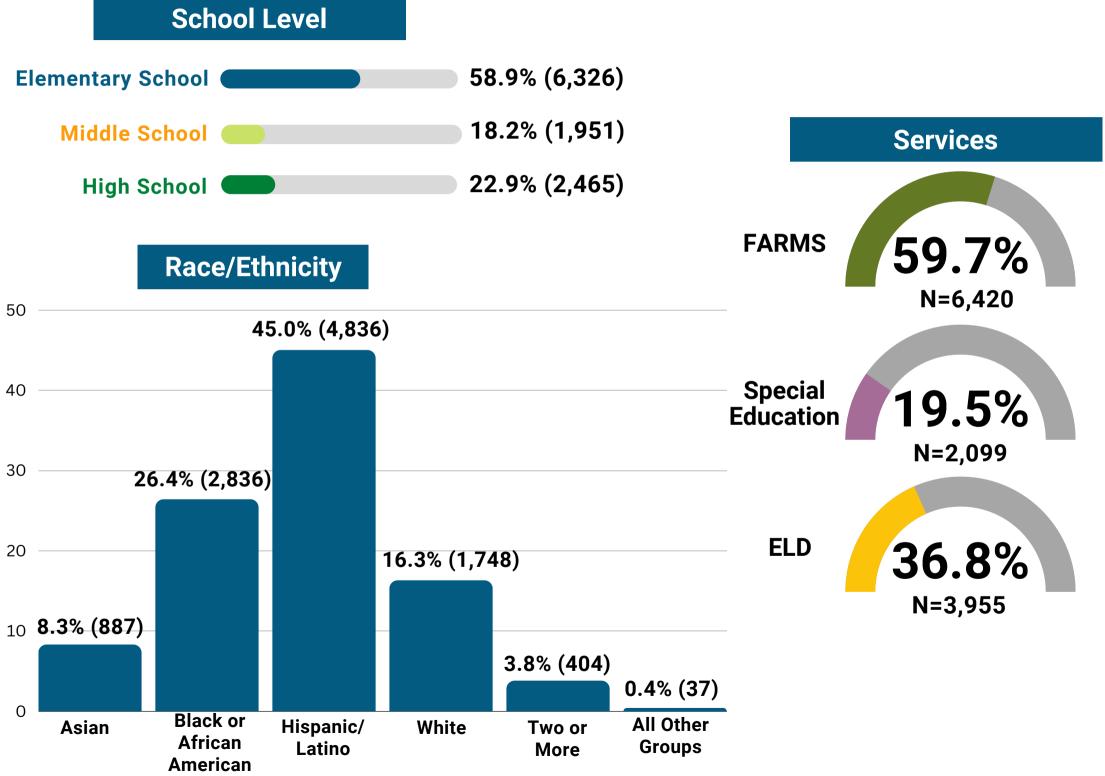
*Note:* The total number of participants includes students who received tutoring or interventions in any subject during the 2022–2023 school year as indicated by Performance Matters. The participant totals also include students accounted for in multiple categories; therefore, the sum of the numbers do not equal the total number of participants and the percentages do not add to 100.



- Of 10,749 total participants, the majority (70%) participated in MCPS-provided tutoring, 23% received support via evidencebased interventions (e.g., Really Great Reading or Math180), and 17% received other academic executive supports (e.g., functioning skills social or support).
- Relatively few students received more than one type of academic support; 236 students received both tutoring and evidence-based interventions, and only 12 students received all three levels of support.

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## **Total Number of Participants - 10,749**

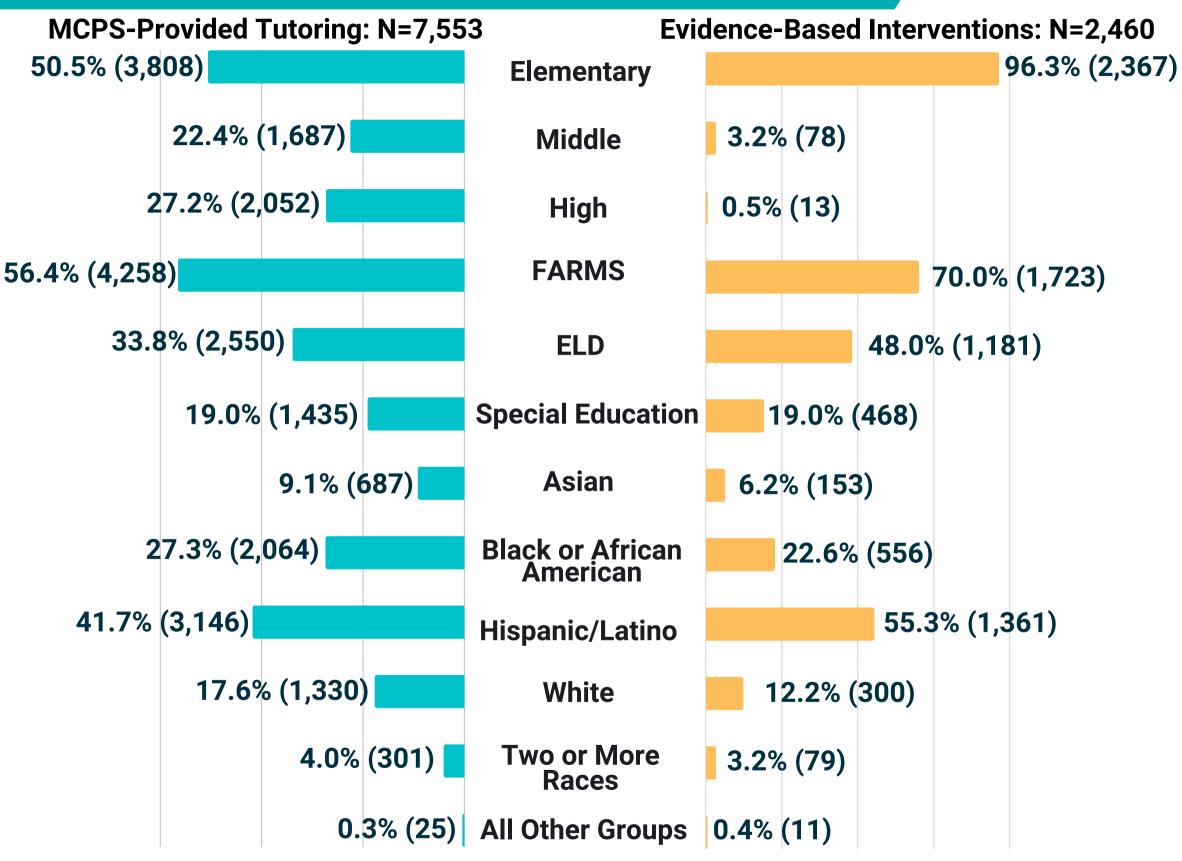


*Note:* Tutoring participation is based on the number of students who received MCPS-provided tutoring, evidence-based interventions, or any other support services (e.g., social skills support) with MCPS employees. All other groups include American Indian/Alaskan Native and Native Hawaiian/Pacific Islander students.



- Most tutoring participants were in elementary school (59%), with middle and high school representing less than 25% of participants.
- The racial/ethnic distribution of participants was 45% Hispanic/Latino, 26% Black or African American, 16% White, 8% Asian, 4% Two or more races, and less than 1% of students from all other racial/ethnic groups.
- More than half of participants (60%) received Free and Reduced-price Meal Systems (FARMS) services, 37% received English Language Development (ELD) services, and 20% received special education services.

**Results** Distribution of Tutoring and Intervention Participants

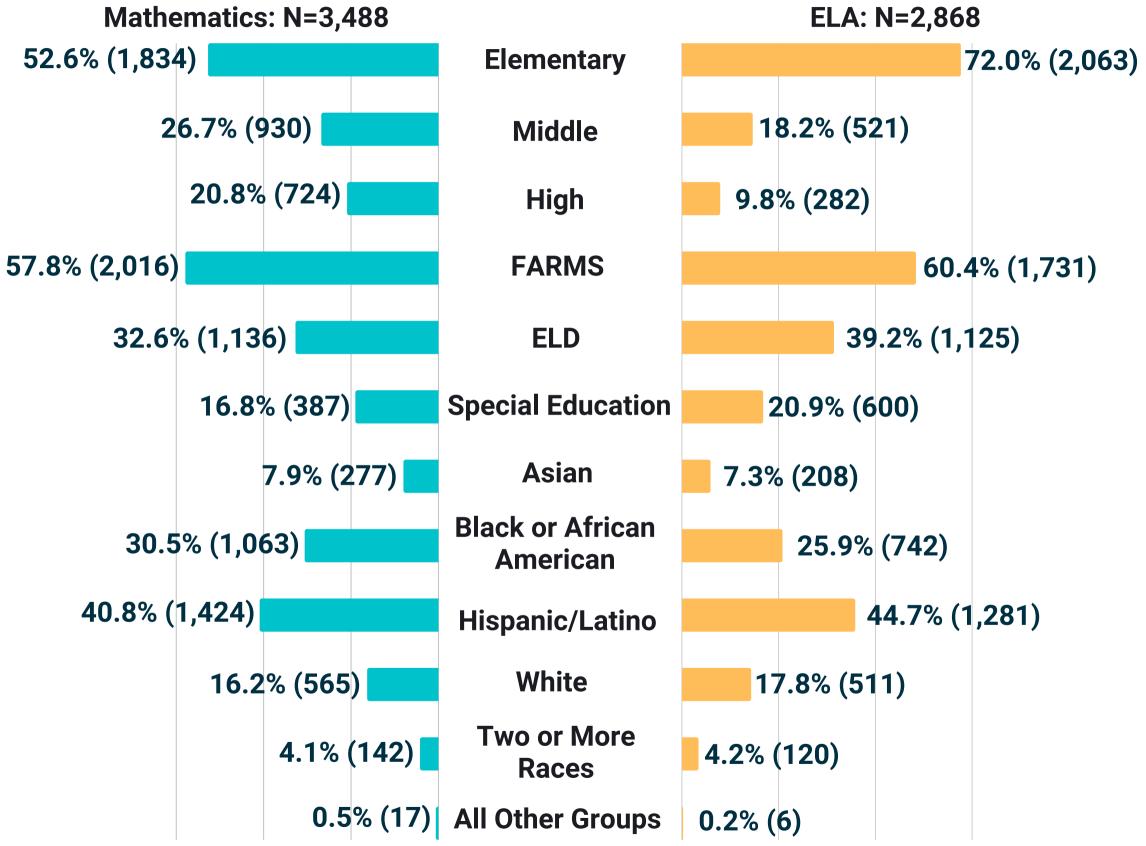


*Note:* The total number of participants includes students who received MCPS-provided tutoring or evidence-based interventions in any subject. Students who received tutoring and evidence-based interventions are counted in both totals. All other groups include American Indian/Alaskan Native and Native Hawaiian/Pacific Islander students.



- Elementary school students constituted 96% of the evidence-based interventions participants and a little over half of the MCPS-provided tutoring participants (51%).
- Around a quarter of MCPS-provided tutoring participants were in middle school (22%) and high school (27%).
- Participants receiving FARMS services represented the largest percentage of students receiving services who participated in MCPS-provided tutoring and evidencebased interventions (56% for tutoring and 70% for evidence-based interventions).
- Most MCPS-provided tutoring and evidencebased interventions participants were students identified as Hispanic/Latino (42% and 55%, respectively) or Black or African American (27% and 23%, respectively).

**Results** Distribution of MCPS-provided Tutoring Participants by Subject



*Note*: The displayed totals for MCPS-provided tutoring in mathematics and ELA include students who received tutoring in both subjects; therefore, the sum of the numbers will not equal the total number of math and ELA participants (5,943). All other groups include American Indian/Alaskan Native and Native Hawaiian/Pacific Islander students.



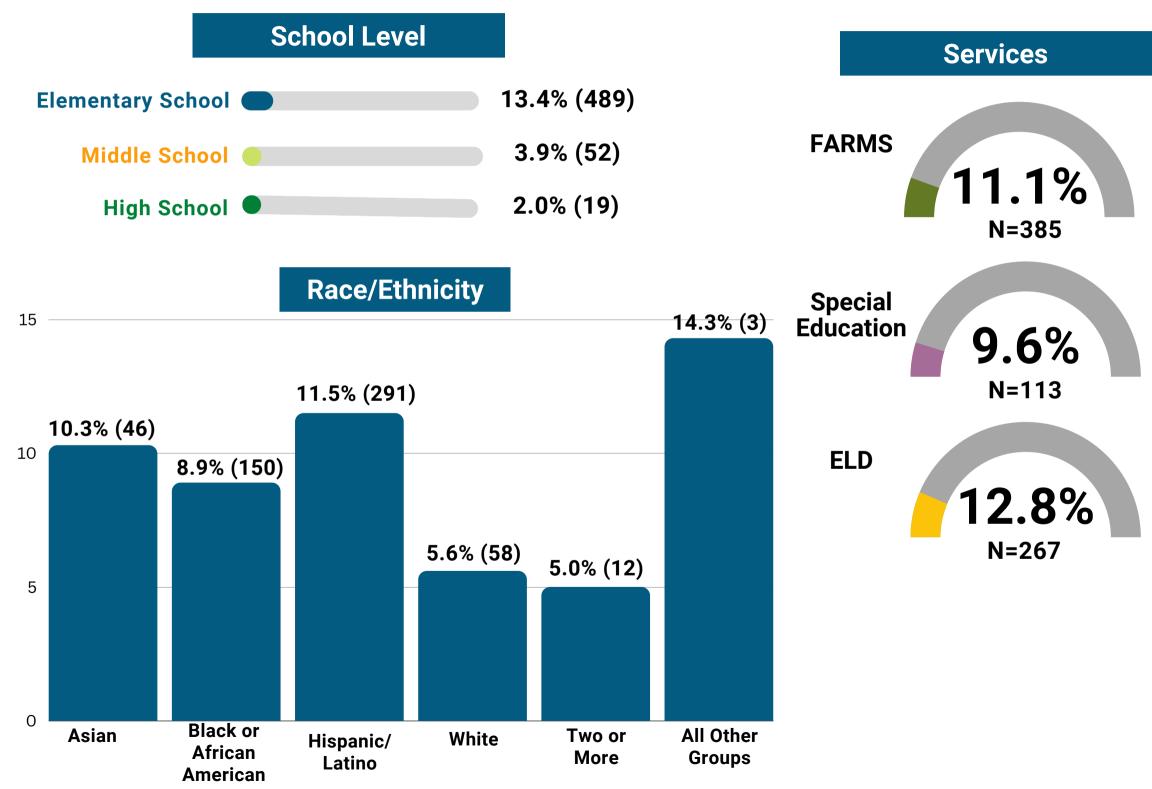
- A total of 5,943 students received MCPSprovided tutoring in either mathematics or ELA. Of the total number of participants, 413 students (7%) received tutoring in both subjects and are, therefore, reflected in both totals.
- Almost three quarters (72%) of the students who received MCPS-provided tutoring in ELA were elementary school students.
- For MCPS-provided tutoring in mathematics, more middle (930 vs. 521) and high school (724 vs. 282) students received mathematics tutoring than ELA tutoring.
- Students receiving FARMS services represented the largest percentage of service group recipients for both mathematics (58%) and ELA (60%).
- More Black or African American students and Hispanic/Latino students received tutoring in mathematics (1,063 and 1,424, respectively) than ELA (742 and 1,281, respectively).



## Results

Participant Distribution of MCPS-provided High-Dosage Tutoring (HDT) in ELA or Mathematics

## **Total Number of HDT Participants - 560 (9%)**



*Note:* Students are identified as high-dosage tutoring (HDT) participants if they participated in a total of 50 or more sessions of MCPS-provided tutoring in mathematics or ELA.

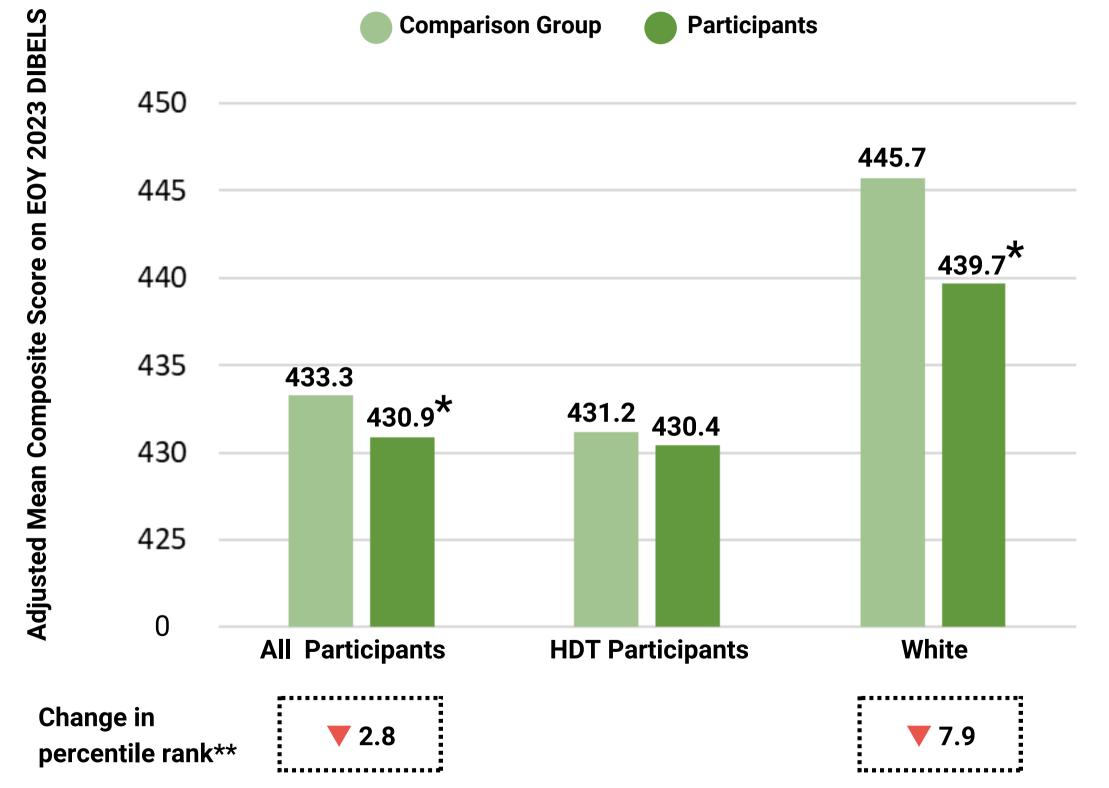
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## Findings

- Of the 5,943 participants who received MCPS-provided tutoring in ELA or mathematics, only 9% received 50 or more sessions in one or both of the two subjects —the dosage threshold for high-dosage tutoring (HDT). The average number of MCPS-provided tutoring sessions was 18 for mathematics and 22 for ELA.
- A larger percentage of elementary-level participants received HDT in mathematics or ELA (13%) than middle and high school participants (both less than 5%).
- Only 10% to 13% of tutoring participants receiving special services received HDT in mathematics or ELA.
- Excluding All Other Groups, the highest racial/ethnic representation in the HDT group was among Hispanic/Latino students, representing 12% of the Hispanic/Latino population of participants.





*Note:* HDT= High-dosage tutoring. \* = Statistically significant difference at the p < 0.05 level. g = Hedges' g (measure of effect size). \*\*Change in percentile rank is the expected percentile-point change for an average (50th percentile) comparison student who participates in tutoring. Effect sizes were translated to changes in percentile rank using the Cohen's U<sub>3</sub> improvement index formula (see What Works Clearinghouse, 2022).

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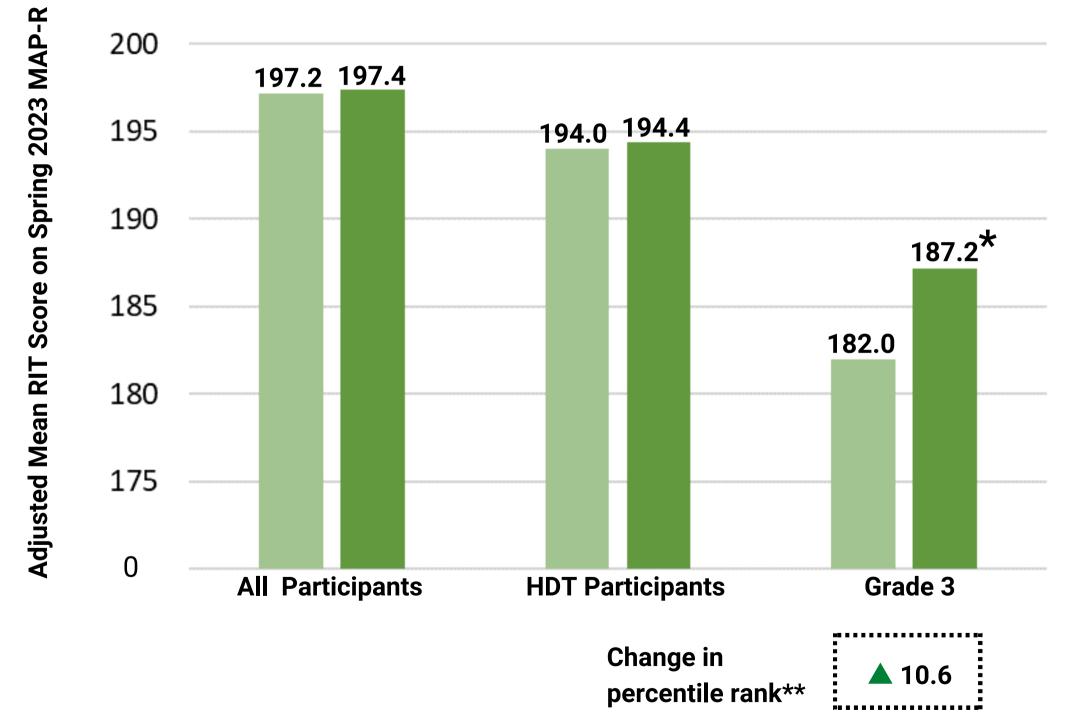
## Findings

- For Grades K-2 students, there was an overall negative relationship between MCPSprovided tutoring participation and spring 2023 reading performance. MCPS-provided tutoring participants scored lower than did matched comparison students on the DIBELS reading assessment.
- Lower reading achievement was also evident for Grades K-2 White participants relative to matched comparison non-participants.
- The magnitude of the overall effect was extremely small (g = -.07) and therefore may not be of practical educational significance. The effect size for White students was small (g = -.20) and equivalent to a 7.9 percentilepoint decrease in reading performance for an average comparison student. In other words, the effect size is equivalent to moving a White comparison student who receives tutoring from the 50th to the 42nd percentile of achievement.

Results MCPS-provided Tutoring in English Language Arts (ELA): Grades 3–8 MAP-R Performance

Comparison Group

Participants

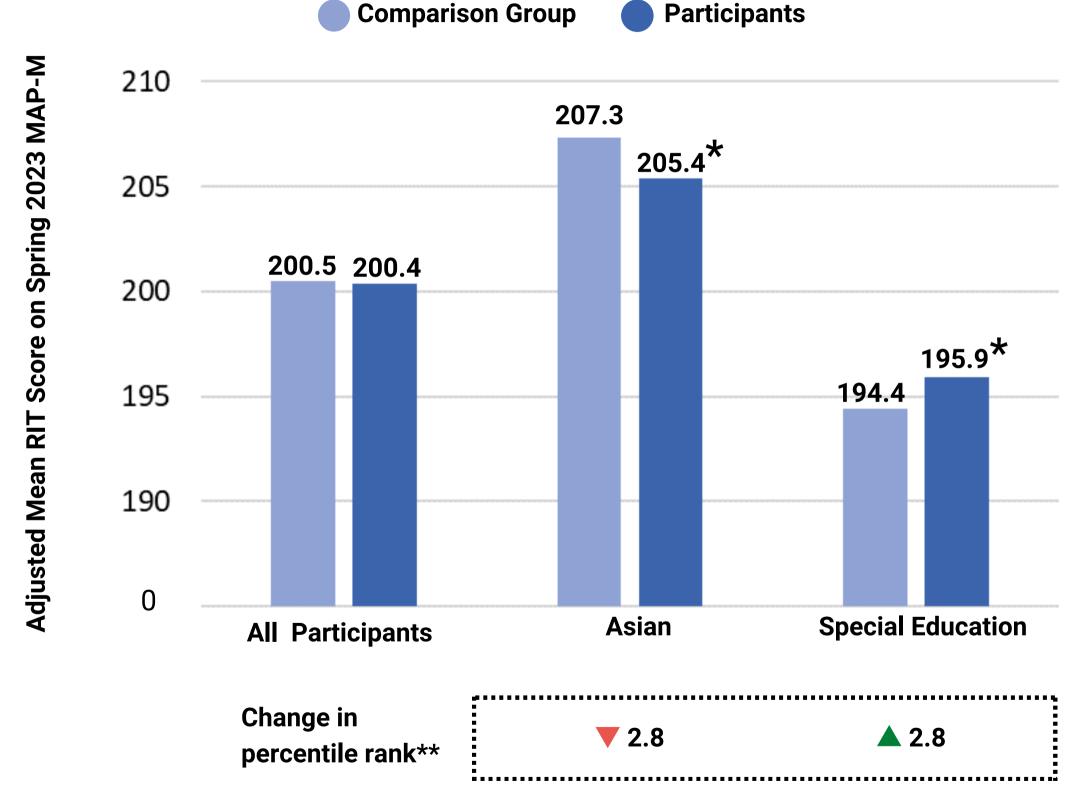


*Note:* HDT= High-dosage tutoring. \* = Statistically significant difference at the p < 0.05 level. g = Hedges' g (measure of effect size). \*\*Change in percentile rank is the expected percentile-point change for an average (50th percentile) comparison student who participates in tutoring. Effect sizes were translated to changes in percentile rank using the Cohen's U<sub>3</sub> improvement index formula (see What Works Clearinghouse, 2022).



- Overall for Grades 3–8 students, there were no statistically significant differences detected in Spring 2023 MAP-R performance between MCPS-provided tutoring participants and matched comparison students or between students who received high-dosage tutoring in ELA and the comparison group.
- The only significant effect found on Spring 2022 MAP-R performance by grade, race/ethnicity, or service receipt was among Grade 3 students; Grade 3 participants, on average, scored significantly higher on the reading assessment than did the matched comparison students.
- The magnitude of the effect on Grade 3 performance was small (g = .27); the size of the effect is equivalent to moving a Grade 3 comparison student who receives tutoring from the 50th to the 61st percentile of achievement (i.e., a 10.6 percentile-point increase).

**Results** MCPS-provided Tutoring in **Mathematics: Grades K–8** MAP-M Performance—**All Participants** 

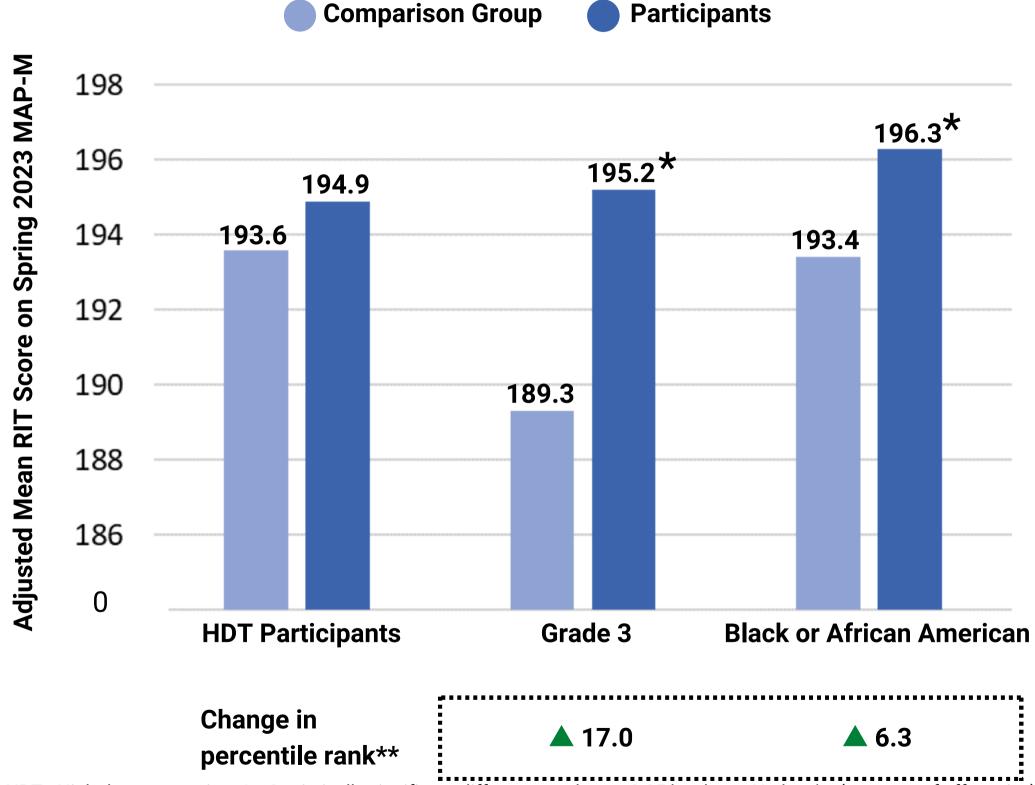


*Note:* \* = Statistically significant difference at the p < 0.05 level. g = Hedges' g (measure of effect size). \*\*Change in percentile rank is the expected percentile-point change for an average (50th percentile) comparison student who participates in tutoring. Effect sizes were translated to changes in percentile rank using the Cohen's U<sub>3</sub> improvement index formula (see What Works Clearinghouse, 2022).



- Overall for Grades K-8 students, there were no statistically significant differences observed in the spring 2023 MAP-M performance between MCPS-provided tutoring participants and the matched comparison non-participants.
- However, when disaggregated by grade, race/ethnicity and service receipt, the results average, demonstrated Asian that. on participants had a lower mean RIT score than did matched comparison students on the spring 2023 MAP-M assessment. In contrast. participants receiving special education services scored higher, on average, than did matched comparison students on the mathematics assessment.
- The significant effects on the performance of Asian students and students receiving special education services were extremely small in size (g = -.07 and g = .07, respectively) and may not be of practical importance for educational settings. The effects are equivalent to either a 2.8 percentile-point decrease (Asian) or increase (special education) in mathematics performance for an average student.

Results MCPS-provided Tutoring in Mathematics: Grades K-8 MAP-M Performance—High-Dosage Tutoring (HDT) Participants



*Note:* HDT= High-dosage tutoring. \* = Statistically significant difference at the p < 0.05 level. g = Hedges' g (measure of effect size). \*\*Change in percentile rank is the expected percentile-point change for an average (50th percentile) comparison student who participates in tutoring. Effect sizes were translated to changes in percentile rank using the Cohen's U<sub>3</sub> improvement index formula (see What Works Clearinghouse, 2022).



- For Grades K-8 students who received high-dosage tutoring in mathematics, there were no overall effects on students' spring 2023 MAP-M performance.
- Disaggregated results, however, revealed that, on average, Grade 3 participants and Black or African American participants demonstrated higher adjusted mean RIT scores than did matched comparison students on the mathematics assessment.
- Mathematics HDT had a medium effect on Grade 3 mathematics performance (g =.44). The magnitude of this effect is equivalent to moving a Grade 3 comparison student who receives tutoring from the 50th to the 67th percentile of achievement. The effect on Black or African American student performance was very small (g =.12) and equates to a 6.3 percentile-point increase in mathematics performance.

## Conclusions

## Summary of Key Findings

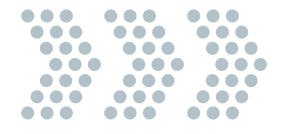
Dosage

Reading Achievement Outcomes

Mathematics Achievement Outcomes Of the 5,943 participants who received MCPS-provided tutoring in ELA or mathematics in 2022–23, **only 9% received 50 or more sessions in either subject**, a lower percentage than in 2021–22 (14%). In 2022–23, the average number of sessions was 18 sessions for mathematics and 22 sessions for English Language Arts.

**Overall for K-2 students, MCPS-provided tutoring participation was associated with slightly lower end-of-year reading performance**, equivalent to a 2.8 percentile point decline for the average comparison student. K-2 White student participants saw lower reading scores than did matched comparison students equivalent to a 7.9 percentile-point decline, or moving a White comparison student who receives tutoring from the 50th to the 42nd percentile of achievement. There was no overall effect of ELA tutoring found on students' Grades 3-8 reading achievement as measured by spring 2023 MAP-R scores. For Grades 3-8 students who received high-dosage tutoring in ELA, disaggregated results revealed a positive effect on Grade 3 reading achievement. On average, Grade 3 high dosage tutoring participants outperformed non-participants on spring reading performance with an effect size equivalent to moving a Grade 3 comparison student who receives tutoring from the 50th to the 61st percentile of achievement (a 10.7 percentile-point increase).

There were no overall effects of MCPS-provided tutoring participation found on Grades K–8 mathematics achievement. Yet, disaggregated results revealed that on average, mathematics tutoring participants receiving special education services scored higher than did matched comparison students on the spring 2023 MAP-M assessment. The opposite effect was evident for Asian students, with Asian participants scoring lower than non-participants on the mathematics assessment. The size of these effects, however, were trivial. The high-dosage tutoring (HDT) results revealed that Grade 3 and Black or African American students who received 50 or more sessions in mathematics achievement were equivalent to a 17 percentile-point increase in mathematics performance (or a move from the 50th to the 67th percentile of achievement) for an average Grade 3 comparison student and a 6.4 percentile-point increase for an average Black or African American comparison student.



## Conclusions cont.

## Limitations

Incomplete dosage data was a limitation of the evaluation that may have influenced the observed outcomes. The number of tutoring sessions for each student was recorded but did not include data on session duration (e.g., minutes). Precise dosage information is beneficial to uncovering tutoring effects and determining if observed outcomes are based on tutoring itself or the result of inaccurately categorizing students as high-dosage tutoring participants.

# Implications

For some student groups, tutoring was associated with lower performance on standardized assessments in reading or mathematics. For others, the evaluation found positive yet trivial or small effects on student achievement scores. Collectively, these findings highlight the reality that some interventions may exacerbate issues of achievement and lead to unintended outcomes, while others may cost thousands of dollars to implement but yield effects too small to be considered practically meaningful. If tutoring or any other academic interventions are not yielding expected outcomes, a new action plan is needed for tackling low performance and gaps in achievement. In devising that action plan, there must be conversations about why problematic achievement patterns persist despite good intentions to solve them. Selecting new interventions or programs to implement calls for the district to fully vet available options and make informed decisions regarding the fit for the district and the feasibility of proper implementation.



## Recommendations

Identify evidence-based low-cost tutoring initiatives and strategies With the sunsetting of ESSER funding, which was used to fund tutoring services, there is a need to examine other low-cost methods to provide tutoring to students. As such, district leaders may wish to consider performing a literature scan to identify (A) existing evidence-based low-cost tutoring initiatives and (B) the key elements of effective tutoring initiatives that could be incorporated into a low-cost environment. For example, Peer Assisted Learning Strategies is a supplemental reading program whereby students pair off to tutor one another in reading, taking turns as tutor and tutee (see U.S. Department of Education, 2012).

Pilot test new low-cost approaches to tutoring

Once new approaches are identified, the district can recruit schools willing to test out or pilot new tutoring initiatives or to scale up existing tutoring initiatives within the school. Make sure to put data systems in place to enable the evaluation of these pilot initiatives. To make the most of a pilot initiative, consider 90-day cycles of inquiry to rapidly learn from and improve upon any new tutoring prototypes.

3

Identify existing or new community partners for additional low-cost tutoring support and to increase tutoring dosage Compared to last school year, more students received tutoring in 2022–23 but fewer received highdosage tutoring. When determining how to allocate limited tutoring resources, there may be a trade-off between quantity (i.e., number of students serviced) and quality (i.e., tutoring dosage). To help prevent such trade-offs—and to leverage another low-cost option for improving tutoring efforts—the district can recruit more tutors by identifying existing or new community partners that could potentially support tutoring initiatives within the district, prioritizing any partners with strong evidence of their tutoring effectiveness or who would offer ready access to appropriate tutoring staff. Potential partners might include United Ways, Boys & Girls Clubs, museums, local postsecondary institutions such as community colleges, or teacher training programs.



## Evaluation Framework



## MAINTAIN CURRENT IMPLEMENTATION FOR ONE YEAR

It is recommended for the district to maintain current implementation of MCPSprovided tutoring for one additional year. The one additional year of implementation is intended to provide an opportunity for the program to demonstrate greater progress towards its goals and objectives. MCPS-provided tutoring was not found to be effective overall at improving student literacy or mathematics performance but does have promise for its implementation with specific student groups, such as Grade 3 students, students receiving special education services, and Black or African American students. The disaggregated effects ranged from trivial to small, but with enhanced strategies and implementation approaches, the district may witness improved student outcomes associated with tutoring participation. The potential achievement outcomes associated with tutoring align with the academic excellence area of the district's strategic plan.





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