Addendum to The Final Report of the EIR Mid-Phase Project on MyTeachingPartner-Secondary Program (September 2023)

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Funded by a federal Education Innovation and Research (EIR) grant, the American Institutes for Research (AIR) conducted a project between 2017 and 2023 to refine and test a strategy for scaling MyTeachingPartner-Secondary (MTP-S), a video-based, Web-mediated teacher coaching program. As part of the EIR project, we conducted an independent evaluation to assess the impact of a scalable version of MTP-S implemented during 2021-22 (Year 1) and 2022-23 (Year 2) on the quality of classroom interactions and student engagement and achievement. Due to COVID-caused delays, we were unable to include findings about the impact of MTP-S on Year 2 student achievement in the final report produced at the end of the EIR project (Wayne, et al., 2023), as Year 2 student achievement data were not yet available. However, with the support of a grant from the William T. Grant Foundation, we were able to complete the collection and analyses of Year 2 student achievement data.

The primary purpose of this addendum is to document the findings from the Year 2 student achievement analyses, which were intended to address the following two research questions (RQs):

- RQ1. What was the impact of MTP-S on student academic achievement at the end of the 2-year program?
- RQ2: To what extent was the impact of MTP-S on Year 2 student achievement moderated by student characteristics?

In addition, this addendum presents updated findings about the impact of MTP-S on Year 1 student achievement. The original findings about Year 1 impact on achievement presented in the EIR final project report (Wayne, et al., 2023) were based on data from five of the six study districts included in the EIR project, as the Year 1 achievement data provided by one study district did not include the student-teacher linkage needed for the achievement analyses. The updated findings about Year 1 impact on achievement were based on all six study districts, as the AIR evaluation team was able to collect updated Year 1 achievement data together with the Year 2 data for that study district with the support from the William T. Grant Foundation.

In the remainder of this addendum, we first provide an overview of the student achievement analyses and then present findings about the overall impact (RQ1) and differential impact (RQ2) of the MTP-S program on Year 2 student achievement, followed by updated findings about program impact on Year 1 student achievement. In the final section of the addendum, we present an updated abstract for our EIR final project report (Wayne, et al., 2023) that incorporates findings from the additional analyses presented below.

Overview of Student Achievement Analyses

Study Design and Sample. The impact evaluation of the MTP-S program conducted as part of the EIR project was based on a blocked cluster randomized controlled trial, in which secondary school math and English language arts (ELA) teachers were randomly assigned to the treatment (MTP-S) and control conditions at the beginning of the first program year (fall 2021) within academic subjects (English language arts and mathematics) and schools. In total, the impact evaluation included 87 teachers (44 treatment and 43 control) from 16 study schools serving a large percentage of high-need students in six districts. The majority (69) of those teachers taught middle school grades, and 18 teachers taught high school grades.

To assess the impact of the 2-year MTP-S program on student achievement, we defined the student sample for assessing Year 1 impact and the sample for assessing Year 2 impact as follows:

- *Year 1 student sample:* all students enrolled in sections of math or ELA taught by study teachers prior to random assignment in the fall of Year 1, not including joiners (i.e., students who entered study teachers' classes after random assignment).
- *Year 2 student sample:* all students enrolled in sections of math or ELA taught by study teachers in the spring of Year 2, who were all joiners.

As defined above, the Year 1 student sample did not include any joiners and thus findings about Year 1 impacts on student outcomes based on this teacher-level RCT have the potential to meet the What Works Clearinghouse (WWC) (2022) standards without reservations. The Year 2 student sample, however, consisted exclusively of joiners by definition, because students in classes taught by study teachers in Year 2 could not be identified until the second year of the program. Since student joiners may introduce a risk of bias for a teacher-level RCT (WWC, 2022), the highest potential rating for Year 2 student impact findings is "meet WWC standards with reservations." Because meeting WWC standards with reservations does not require assessing attrition, we defined the Year 2 student sample based on students taught by study teachers at the end, rather than the beginning, of Year 2, which maximizes the analytic sample size.

Measures of Achievement. Measures of student achievement for this study were based on both state end-of-grade (EOG) tests and end-of-course (EOC) tests in math and ELA obtained from study districts.

For each subject, the primary measure of student achievement was a measure created based on all available test data. This "(EOG+EOC)" score was the EOG test score for students with such data and the EOC test score for students with an EOC test score but not an EOG test score in the given subject. Before creating the combined measure, we standardized the EOC and EOG test scores within each study district based on the district mean and standard deviation for the specific test.

We used the EOG test scores in math and ELA as supplemental measures of student achievement. We did not analyze EOC test scores separately due to the limited EOC data available. In addition to subject-specific analyses of (EOG+EOC) test scores and EOG test scores, we also conducted analyses of these measures with data pooled across both math and ELA study teachers. For students who were taught by both a math study teacher and an ELA study teacher and had both a math score and an ELA score in the pooled data set, we randomly selected one score for inclusion in the pooled achievement analysis so that each student contributed only one unique record to the pooled analysis of the "overall" (EOG+EOC) test scores or the "overall" EOG test scores.

For both Year 1 and Year 2 student achievement analyses, the baseline measure corresponding to each achievement outcome measure is students' test scores in the same subject(s) from the prior spring. For students in Grades 6–9, we used their EOG test scores in math and ELA as the baseline measures for the achievement impact analyses. For high school students without EOG test scores from the prior year, we used their EOC test scores from the most comparable course (standardized within course and district) from the prior year as the baseline achievement measure.

Analytic Methods. As described in detail in our final EIR project report (Wayne, et al., 2023), we assessed the intent-to-treat impact of MTP-S on Year 1 student achievement using a three-level model (students within courses within teachers), controlling for random assignment blocks and student and teacher background characteristics, including baseline achievement and test type (EOG vs. EOC). The model was estimated separately for math and ELA teachers as well as with data pooled across teachers of both subjects. We used the same method to assess the impact of MTP-S on Year 2 student achievement (RQ1) presented in this addendum. To examine whether the impact of MTP-S on Year 2 student achievement was moderated by a given student or teacher characteristic (RQ2), we incorporated an interaction between treatment status and the given student or teacher characteristic into the main student achievement impact model used to address RQ1.

For both RQ1 and RQ2 analyses, we excluded students with missing outcome data and imputed missing values on covariates using the dummy variable adjustment approach. Exhibit 1 presents the analytic sample size for Year 2 student achievement analyses, by outcome and study group.

Exhibit 1. Sample Sizes of Year 2 Student Achievement Analyses, by Outcome and Study Group

Student Achievement Outcome	Treatment Group		Control Group	
	N of Teachers	N of Students	N of Teachers	N of Students
ELA EOG score	10	690	10	687
ELA (EOG+EOC) score	13	1,122	14	1,040
Math EOG score	14	1,257	17	1,641
Math (EOG+EOC) score	16	1,631	18	1,774
Overall EOG score	24	1,696	27	2,135
Overall (EOG+EOC) score	29	2,471	32	2,570

Findings About the Impact of MTP-S on Year 2 Student Achievement

Exhibit 2 presents findings about the impacts of MTP-S on student achievement outcomes measured at the end of the 2-year program based on subject-specific achievement data and achievement data pooled across both math and ELA. Although none of the Year 2 impact estimates were statistically significant, most of the estimates were in the negative direction, with effect sizes ranging from -0.18 to 0.09.

Exhibit 2. Year 2 Impacts of the MTP-S Program on Student Achievement Outcomes

Student Achievement Outcome	Treatment Group		Control Group		Treatment–Control Difference	Standard Error	Effect Size	p-value
	Mean	SD	Mean	SD				
ELA EOG score	-0.01	0.99	0.14	0.92	-0.15	0.13	-0.15	0.261
ELA (EOG+EOC) score	0.13	1.00	0.05	0.92	0.08	0.15	0.09	0.593
Math EOG score	-0.09	0.85	0.06	0.95	-0.15	0.11	-0.16	0.186
Math (EOG+EOC) score	-0.02	0.90	0.16	0.96	-0.18	0.10	-0.19	0.074
Overall EOG score	-0.03	0.92	0.12	0.91	-0.15	0.09	-0.16	0.096
Overall (EOG+EOC) score	0.07	0.96	0.18	0.91	-0.10	0.08	-0.08	0.399

Note. See Exhibit 1 for sample size information. The treatment group means are unadjusted means; the control group means were computed based on the unadjusted treatment group means and the estimated mean differences. Effect sizes were computed as Hedges' g. SD = standard deviation.

Given that the sample of the Year 2 student achievement analyses includes student joiners who might have introduced a risk of bias to the impact estimates, we examined the equivalence of the two study groups in the baseline measure of each Year 2 achievement outcome. Although the baseline differences between the two groups were all non-significant and mostly small or in the "adjustable" range according to the WWC (2022) standards, the baseline difference for the ELA (EOG+EOC) score

had an effect size of 0.30, exceeding the threshold (0.25) of adjustable baseline differences (see Appendix A for detailed baseline equivalence results). Therefore, the Year 2 impact finding for the ELA (EOG+EOC) score may lack internal validity and needs to be interpreted with caution.

While our primary Year 2 achievement impact analyses were based on data collected from all six study districts, we also conducted a set of supplemental analyses restricted to the four districts where study teachers participated in the study during both program years (i.e., the 2-year districts). We excluded from this set of analyses the two districts where study teachers participated only during the first year, even though Year 2 achievement data were available for their students. Findings from this set of analyses as well as the corresponding baseline equivalence analyses are presented in Appendix B. As Appendix Exhibit B1 shows, Year 2 achievement impact estimates based on the four 2-year districts tended to be more negative than the estimates based on all six study districts, and one negative estimate based on the 2-year districts—the estimate for overall EOG score—was statistically significant with an effect size of -0.25. The more negative estimates for the impact on student achievement in the four 2-year districts than in the overall study sample was not surprising given that the MTP-S program as implemented in this study appeared to have a negative impact on student achievement as shown in Exhibit 2. Thus, the negative impact after two years for districts that participated in the program in both years might be more pronounced than the impact across a mix of districts participating in the program in both years and districts participating in only the first year.

Findings About the Differential Impact of MTP-S on Year 2 Student Achievement

In addition to the main impacts of MTP-S on Year 2 student achievement outcomes, we examined whether those impacts varied significantly by student characteristics (prior achievement and demographic characteristics). As Exhibit 3 shows, for half of the six student characteristics examined (i.e., gender, race, and special education status), there was no significant differential impact on any of the Year 2 achievement measures analyzed based on data from all six study districts. We did find a few significant differential impact estimates by student's prior achievement and English learner status, but there were no clear patterns in those results. The only student characteristic with largely consistent differential impact results is eligibility for free- or reduced-price lunch. For the two math achievement outcomes and the two "overall" achievement outcomes, even though program impact appeared negative for both student subgroups defined by eligibility for free- or reduced-price lunch, the negative impact estimate was significantly smaller in magnitude for students eligible for free- or reduced-price lunch than for students not eligible ($p < .05$). For the two ELA achievement outcomes, the estimates of differential impact by eligibility for free- or reduced-price lunch were in the same direction (i.e., more favorable for eligible students), but not statistically significant. The differential impact estimates based on analyses restricted to the four 2-year districts (see Appendix Exhibit B5) were mostly in the same direction, but fewer estimates were significant, partly due to the smaller sample size.

Exhibit 3. Differential Impacts of MTP-S on Year 2 Student Achievement Outcomes, by Student Characteristics

Student Characteristics	Impact Estimate for X = 0	Impact Estimate for X = 1	Difference in Impact	Standard Error	p-value
Outcome: ELA EOG Score					
Prior achievement	-0.13	0.00	0.13	0.13	0.007
Gender	-0.15	-0.14	0.00	0.14	0.953
Eligibility for free- or reduced-price lunch	-0.18	-0.13	0.05	0.14	0.491
English learner status	-0.18	0.09	0.27	0.13	0.025
Special education status	-0.14	-0.16	-0.02	0.13	0.867
Race	-0.16	-0.14	0.01	0.14	0.845
Outcome: ELA (EOG+EOC) Score					
Prior achievement	0.10	0.23	0.14	0.16	0.000
Gender	0.05	0.11	0.05	0.16	0.333
Eligibility for free- or reduced-price lunch	0.06	0.09	0.03	0.16	0.669
English learner status	0.06	0.23	0.17	0.15	0.063
Special education status	0.09	0.06	-0.02	0.16	0.826
Race	0.07	0.09	0.03	0.16	0.640
Outcome: Math EOG Score					
Prior achievement	-0.14	-0.20	-0.06	0.11	0.067
Gender	-0.12	-0.17	-0.05	0.12	0.231
Eligibility for free- or reduced-price lunch	-0.23	-0.10	0.13	0.12	0.012
English learner status	-0.15	-0.14	0.01	0.11	0.912
Special education status	-0.13	-0.25	-0.12	0.11	0.125
Race	-0.17	-0.12	0.06	0.11	0.251
Outcome: Math (EOG+EOC) Score					
Prior achievement	-0.13	-0.17	-0.05	0.10	0.136
Gender	-0.18	-0.18	-0.01	0.10	0.889
Eligibility for free- or reduced-price lunch	-0.26	-0.12	0.13	0.10	0.008
English learner status	-0.18	-0.19	-0.01	0.10	0.906
Special education status	-0.18	-0.20	-0.02	0.10	0.779

Student Characteristics	Impact Estimate for X = 0	Impact Estimate for X = 1	Difference in Impact	Standard Error	p-value
Race	-0.21	-0.14	0.07	0.10	0.117
Outcome: Overall EOG Score					
Prior achievement	-0.15	-0.13	0.02	0.09	0.556
Gender	-0.13	-0.17	-0.03	0.09	0.387
Eligibility for free- or reduced-price lunch	-0.22	-0.11	0.11	0.09	0.014
English learner status	-0.16	-0.10	0.06	0.09	0.332
Special education status	-0.13	-0.26	-0.13	0.09	0.076
Race	-0.17	-0.13	0.05	0.09	0.284
Outcome: Overall (EOG+EOC) Score					
Prior achievement	-0.10	-0.06	0.04	0.09	0.122
Gender	-0.11	-0.10	0.01	0.09	0.713
Eligibility for free- or reduced-price lunch	-0.17	-0.06	0.11	0.09	0.010
English learner status	-0.11	-0.08	0.02	0.08	0.668
Special education status	-0.09	-0.15	-0.06	0.09	0.408
Race	-0.13	-0.08	0.05	0.09	0.209

Note. See Exhibit 1 for sample size information. For analyses of differential impact by students' prior achievement score, X = 1 for students with prior achievement scores that were 1 standard deviation above the district mean, and X = 0 for students with prior achievement scores at district mean. For analyses of differential impact by the other student characteristics, X = 1 for female students, students eligible for free- or reduced-price lunch, English learners, special education students, and non-White students; X = 0 otherwise.

Updated Findings About the Impact of MTP-S on Year 1 Student Achievement

In this section, we present updated findings about the impact of MTP-S on Year 1 student achievement based on all six study districts, one of which was excluded from the Year 1 achievement analyses presented in our EIR final project report (Wayne, et al., 2023) due to the lack of student-teacher linkage in the data we received earlier. With the updated Year 1 achievement data from that district, we were able to add 8 teachers (4 treatment and 4 control) and 337 students (151 treatment and 186 control) to the overall Year 1 achievement analysis sample. Exhibit 4 presents the sample size information for the updated Year 1 achievement analyses based on data from all six study districts. The last column of the exhibit indicates whether each achievement outcome had high or low attrition according to WWC's (2022) attrition standards. Of the six Year 1 achievement outcomes analyzed,

there was no teacher-level attrition for any of the outcomes and student-level attrition was high only for the math EOG score due to the high differential attrition rate for this measure.[1]

Exhibit 4. Sample Sizes at Randomization and in Analytic Samples for Year 1 Student Achievement Outcomes in All Six Study Districts, by Study Group

Year 1 Student Achievement Outcomes	Treatment Group				Control Group				Attrition
	Teachers		Students		Teachers		Students		
	# Random-ized	# Analytic Sample	# Random-ized	# Analytic Sample	# Random-ized	# Analytic Sample	# Random-ized	# Analytic Sample	
ELA EOG score	17	17	1,067	1,002	17	17	923	873	Low
ELA (EOG+EOC) score	22	22	1,788	1,594	21	21	1,144	955	Low
Math EOG score	19	19	1,600	1,279	21	21	1,846	1,688	High
Math (EOG+EOC) score	21	21	1,802	1,680	22	22	1,987	1,835	Low
Overall EOG score	36	36	1,998	1,823	38	38	2,198	2,151	Low
Overall (EOG+EOC) score	43	43	3,047	2,790	43	43	2,645	2,423	Low

Exhibit 5 presents updated findings about the impacts of the MTP-S program on Year 1 student achievement outcomes based on subject-specific achievement data and achievement data pooled across both math and ELA. The updated findings based on data from all six study districts are similar to our earlier findings based on data from five study districts. The impact estimates for all the achievement measures examined were relatively small, with effect sizes ranging from -0.08 to 0.05. None of those estimates were statistically significant.[2]

Exhibit 5. Updated Year 1 Impacts of the MTP-S Program on Student Achievement Outcomes in All Six Study Districts

Student Achievement Measure	Treatment Group		Control Group		Treatment–Control Difference	Standard Error	Effect Size	p-value
	Mean	SD	Mean	SD				
ELA EOG score	-0.11	0.83	-0.11	0.81	0.00	0.06	0.00	0.959
ELA (EOG+EOC) score	-0.18	0.94	-0.19	0.84	0.01	0.07	0.01	0.874
Math EOG score	-0.14	0.77	-0.10	0.81	-0.04	0.05	-0.05	0.460
Math (EOG+EOC) score	-0.12	0.75	-0.06	0.81	-0.06	0.05	-0.08	0.257

[1] For Year 1 math EOC score, the student-level overall and differential attrition rates were 13.9% and 11.5%, respectively. We examined attrition for Year 1, but not Year 2, achievement outcomes, because the Year 2 achievement analysis samples included student joiners who may pose a risk of bias. As a result, what matters for the internal validity of Year 2 achievement findings is baseline equivalence rather than attrition per the WWC (2022) standards.

[2] Baseline equivalence analysis results presented in Exhibit C1 in Appendix C indicate that differences in prior achievement scores between the two study groups were all non-significant and in the "adjustable" range according to the WWC (2022) standard, with effect sizes ranging from -0.19 to 0.05.

Student Achievement Measure	Treatment Group		Control Group		Treatment–Control Difference	Standard Error	Effect Size	p-value
	Mean	SD	Mean	SD				
Overall EOG score	-0.12	0.84	-0.10	0.84	-0.02	-0.03	0.04	0.583
Overall (EOG+EOC) score	-0.14	0.89	-0.11	0.84	-0.03	-0.04	0.05	0.485

Note. See Exhibit 4 for sample size information. The treatment group means are unadjusted means; the control group means were computed based on the unadjusted treatment group means and the estimated mean differences. Effect sizes were computed as Hedges' g. SD = standard deviation.

While our earlier analyses of Year 1 achievement data from five study districts did not reveal a significant differential impact based on any of the student characteristics examined, our updated analyses based on achievement data from all six study districts did reveal a significant differential impact by English learner status (see Exhibit 6). Specifically, for ELA EOG scores, the impact estimate was positive for English learners but negative for non-English learners, and the difference in impact was statistically significant ($p < .01$). Year 1 impact on other student achievement outcomes, however, did not vary significantly by any of the student characteristics examined.

Exhibit 6. Differential Impacts of MTP-S on Year 1 Student Achievement Outcomes, by Student Characteristics

Student Characteristics	Impact Estimate for X = 0	Impact Estimate for X = 1	Difference in Impact	Standard Error	p-value
Outcome: ELA EOG Score					
Prior achievement	0.00	-0.01	-0.01	0.06	0.811
Gender	-0.04	0.05	0.08	0.07	0.104
Eligibility for free- or reduced-price lunch	0.00	0.00	0.01	0.08	0.919
English learner status	-0.04	0.23	0.27	0.06	0.002
Special education status	0.02	-0.09	-0.11	0.06	0.210
Race	-0.02	0.02	0.04	0.07	0.461
Outcome: ELA (EOG+EOC) Score					
Prior achievement	0.01	0.01	0.00	0.07	0.997
Gender	-0.02	0.05	0.07	0.07	0.167
Eligibility for free- or reduced-price lunch	0.02	0.01	-0.01	0.08	0.882
English learner status	-0.01	0.13	0.14	0.07	0.063
Special education status	0.02	-0.03	-0.05	0.07	0.562
Race	-0.01	0.02	0.03	0.07	0.542
Outcome: Math EOG Score					

Student Characteristics	Impact Estimate for X = 0	Impact Estimate for X = 1	Difference in Impact	Standard Error	p-value
Prior achievement	-0.04	-0.07	-0.03	0.05	0.367
Gender	-0.04	-0.04	-0.01	0.06	0.876
Eligibility for free- or reduced-price lunch	-0.05	-0.04	0.02	0.07	0.772
English learner status	-0.03	-0.12	-0.09	0.05	0.217
Special education status	-0.03	-0.09	-0.06	0.05	0.455
Race	-0.02	-0.05	-0.03	0.06	0.519
Outcome: Math (EOG+EOC) Score					
Prior achievement	-0.06	-0.08	-0.02	0.05	0.423
Gender	-0.06	-0.06	0.00	0.06	0.936
Eligibility for free- or reduced-price lunch	-0.11	-0.05	0.06	0.07	0.225
English learner status	-0.05	-0.10	-0.05	0.05	0.411
Special education status	-0.05	-0.11	-0.05	0.05	0.466
Race	-0.06	-0.06	-0.01	0.06	0.889
Outcome: Overall EOG Score					
Prior achievement	-0.02	-0.02	0.00	0.04	0.931
Gender	-0.04	0.00	0.04	0.05	0.336
Eligibility for free- or reduced-price lunch	-0.05	-0.02	0.04	0.06	0.439
English learner status	-0.02	-0.06	-0.05	0.04	0.454
Special education status	-0.02	-0.08	-0.06	0.04	0.371
Race	-0.01	-0.04	-0.03	0.05	0.494
Outcome: Overall (EOG+EOC) Score					
Prior achievement	-0.03	-0.03	0.00	0.05	0.999
Gender	-0.06	0.00	0.06	0.05	0.116
Eligibility for free- or reduced-price lunch	-0.08	-0.02	0.06	0.06	0.164
English learner status	-0.03	-0.06	-0.03	0.05	0.564
Special education status	-0.03	-0.08	-0.05	0.05	0.438
Race	-0.03	-0.03	0.00	0.05	0.973

Note. See Exhibit 1 for sample size information. For analyses of differential impact by students' prior achievement score, X = 1 for students with prior achievement scores that were 1 standard deviation above the district mean, and X = 0 for students with prior achievement scores at district mean. For analyses of differential impact by the other student characteristics, X = 1 for female students, students eligible for free- or reduced-price lunch, English learners, special education students, and non-White students; X = 0 otherwise.

Updated Abstract for EIR Final Project Report

Relying on a teacher-level randomized experiment with a sample of 87 middle and high school teachers, this study was designed to examine the implementation and impact of MyTeachingPartner-Secondary delivered by local coaches who were trained and supported by the program provider. Due to disruptions caused by the COVID-19 pandemic, implementation of the 2-year program during the first year (2021–22) was weak, and only four of six study districts continued to participate in the study in the second year. Implementation during the second year was stronger but still did not achieve fidelity based on pre-specified fidelity thresholds. Analyses of teacher survey data revealed that the program had a statistically significant positive impact on teachers' enthusiasm about teaching and a marginally significant positive impact on teachers' self-efficacy at the end of the 2-year program. Nevertheless, the study did not find any significant impact on the quality of classroom interactions or student engagement based on observations at the end of Year 2 or on students' math or English language arts achievement at the end of either program year. Results from this study need to be interpreted with caution given study limitations resulting largely from the influence of the pandemic.

References

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Appendix A. Supporting Exhibits for Baseline Equivalence Analyses for Year 2 Student Achievement Outcomes (All Six Study Districts)

Exhibit A1. Prior Achievement Scores for Year 2 Student Achievement Outcomes, by Study Group

Prior (Spring 2022) Achievement Measure	Treatment Group		Control Group		Treatment–Control Difference	Standard Error	Effect Size	p-value
	Mean	SD	Mean	SD				
ELA EOG score	0.17	0.86	0.19	0.88	-0.02	0.18	-0.02	0.910
ELA (EOC+EOG) score	0.22	0.91	-0.06	0.96	0.28	0.21	0.30	0.194
Math EOG score	-0.06	0.82	-0.01	0.87	-0.05	0.16	-0.05	0.771
Math (EOC+EOG) score	0.03	0.90	-0.04	0.88	0.07	0.16	0.08	0.647
Overall EOG score	0.05	0.84	0.08	0.88	-0.03	0.11	-0.04	0.781
Overall (EOC+EOG) score	0.14	0.92	-0.03	0.91	0.17	0.13	0.18	0.184

Note. See Exhibit A2 for sample size information. The treatment group means are unadjusted means; the control group means were computed based on the unadjusted treatment group means and the estimated mean differences. Effect sizes were computed as Hedges' g. SD = standard deviation.

Exhibit A2. Sample Sizes for Baseline Equivalence Analyses for Year 2 Student Achievement Outcomes, by Study Group

Prior (Spring 2022) Achievement Measure	Treatment Group		Control Group	
	N of Teachers	N of Students	N of Teachers	N of Students
ELA EOG score	10	643	10	648
ELA (EOC+EOG) score	13	1,036	14	965
Math EOG score	14	1,143	17	1,494
Math (EOC+EOG) score	16	1,497	18	1,585
Overall EOG score	24	1,556	27	1,958
Overall (EOC+EOG) score	29	2,275	32	2,338

Appendix B. Supporting Exhibits for Year 2 Impact on Student Achievement in the Four 2-Year Study Districts

Exhibit B1. Year 2 Impact of the MTP-S Program on Student Achievement in the Four 2-Year Study Districts

Student Achievement Outcome	Treatment Group		Control Group		Treatment–Control Difference	Standard Error	Effect Size	p-value
	Mean	SD	Mean	SD				
ELA EOG score	-0.01	1.00	0.31	1.02	-0.32	0.23	-0.32	0.150
ELA (EOG+EOC) score	0.18	1.00	0.03	0.97	0.15	0.26	0.15	0.564
Math EOG score	-0.15	0.84	0.04	0.97	-0.18	0.13	-0.20	0.147
Math (EOG+EOC) score	-0.05	0.91	0.16	0.98	-0.21	0.11	-0.23	0.053
Overall EOG score	-0.07	0.92	0.16	0.94	-0.23	0.12	-0.25	0.049
Overall (EOG+EOC) score	0.08	0.97	0.22	0.93	-0.15	0.11	-0.16	0.162

Note. See Exhibit B2 for sample size information. The treatment group means are unadjusted means; the control group means were computed based on the unadjusted treatment group means and the estimated mean differences. Effect sizes were computed as Hedges' g. SD = standard deviation.

Exhibit B2. Sample Sizes of Year 2 Student Achievement Analyses Based on Data from the Four 2-Year Study Districts, by Outcome and Study Group

Student Achievement Outcome	Treatment Group		Control Group	
	N of Teachers	N of Students	N of Teachers	N of Students
ELA EOG score	5	395	4	328
ELA (EOG+EOC) score	8	827	8	681
Math EOG score	12	970	15	1,304
Math (EOG+EOC) score	14	1,344	16	1,437
Overall EOG score	17	1,141	19	1,442
Overall (EOG+EOC) score	22	1,918	24	1,877

Exhibit B3. Prior Achievement Scores for Year 2 Student Achievement Outcomes in the Four 2-Year Study Districts, by Study Group

Prior (Spring 2022) Achievement Measure	Treatment Group		Control Group		Treatment–Control Difference	Standard Error	Effect Size	p-value
	Mean	SD	Mean	SD				
ELA EOG score	0.16	0.79	0.32	0.85	-0.16	0.22	-0.19	0.481
ELA (EOC+EOG) score	0.23	0.90	-0.19	0.99	0.42	0.31	0.45	0.175
Math EOG score	-0.13	0.78	-0.10	0.87	-0.03	0.18	-0.03	0.882
Math (EOC+EOG) score	0.00	0.90	-0.11	0.88	0.11	0.18	0.12	0.543
Overall EOG score	-0.01	0.79	0.04	0.87	-0.05	0.13	-0.06	0.698
Overall (EOC+EOG) score	0.13	0.91	-0.09	0.92	0.22	0.16	0.24	0.161

Note. See Exhibit B4 for sample size information. The treatment group means are unadjusted means; the control group means were computed based on the unadjusted treatment group means and the estimated mean differences. Effect sizes were computed as Hedges' g. SD = standard deviation.

Exhibit B4. Sample Sizes for Baseline Equivalence Analyses for Year 2 Student Achievement Outcomes in the Four 2-Year Study Districts, by Study Group

Prior (Spring 2022) Achievement Measure	Treatment Group		Control Group	
	N of Teachers	N of Students	N of Teachers	N of Students
ELA EOG score	5	376	4	313
ELA (EOC+EOG) score	8	769	8	630
Math EOG score	12	887	15	1,190
Math (EOC+EOG) score	14	1,241	16	1,281
Overall EOG score	17	1,054	19	1,320
Overall (EOC+EOG) score	22	1,775	24	1,700

Exhibit B5. Differential Impacts of MTP-S on Year 2 Student Achievement Outcomes in the Four 2-Year Study Districts, by Student Characteristics

Student Characteristics	Impact Estimate for X = 0	Impact Estimate for X = 1	Difference in Impact	Standard Error	p-value
Outcome: ELA EOG Score					
Prior achievement	-0.32	-0.31	0.01	0.23	0.845
Gender	-0.32	-0.33	-0.01	0.23	0.901
Eligibility for free- or reduced-price lunch	-0.39	-0.30	0.10	0.23	0.378
English learner status	-0.37	0.01	0.38	0.21	0.007
Special education status	-0.30	-0.42	-0.13	0.24	0.485
Race	-0.33	-0.32	0.01	0.23	0.880
Outcome: ELA (EOG+EOC) Score					
Prior achievement	0.16	0.27	0.11	0.27	0.024
Gender	0.11	0.19	0.08	0.26	0.235
Eligibility for free- or reduced-price lunch	0.12	0.16	0.04	0.27	0.635
English learner status	0.12	0.30	0.18	0.26	0.079
Special education status	0.17	0.07	-0.10	0.27	0.528
Race	0.13	0.17	0.04	0.27	0.620
Outcome: Math EOG Score					
Prior achievement	-0.18	-0.28	-0.10	0.13	0.009
Gender	-0.16	-0.21	-0.05	0.13	0.309
Eligibility for free- or reduced-price lunch	-0.24	-0.15	0.09	0.13	0.161
English learner status	-0.19	-0.13	0.07	0.13	0.364
Special education status	-0.17	-0.24	-0.07	0.13	0.453
Race	-0.21	-0.14	0.07	0.13	0.191
Outcome: Math (EOG+EOC) Score					
Prior achievement	-0.21	-0.28	-0.07	0.11	0.031
Gender	-0.22	-0.21	0.01	0.11	0.912
Eligibility for free- or reduced-price lunch	-0.28	-0.17	0.10	0.12	0.077
English learner status	-0.22	-0.18	0.04	0.11	0.605
Special education status	-0.22	-0.17	0.05	0.11	0.534

Student Characteristics	Impact Estimate for X = 0	Impact Estimate for X = 1	Difference in Impact	Standard Error	p-value
Race	-0.25	-0.16	0.09	0.11	0.080
Outcome: Overall EOG Score					
Prior achievement	-0.23	-0.28	-0.05	0.12	0.201
Gender	-0.22	-0.25	-0.03	0.12	0.523
Eligibility for free- or reduced-price lunch	-0.29	-0.20	0.09	0.12	0.132
English learner status	-0.25	-0.12	0.13	0.12	0.077
Special education status	-0.22	-0.32	-0.10	0.12	0.257
Race	-0.25	-0.20	0.05	0.12	0.330
Outcome: Overall (EOG+EOC) Score					
Prior achievement	-0.15	-0.14	0.01	0.11	0.798
Gender	-0.16	-0.13	0.03	0.11	0.457
Eligibility for free- or reduced-price lunch	-0.21	-0.11	0.10	0.11	0.045
English learner status	-0.16	-0.10	0.06	0.11	0.335
Special education status	-0.15	-0.15	-0.01	0.11	0.927
Race	-0.17	-0.12	0.06	0.11	0.213

Note. See Exhibit B2 for sample size information. For analyses of differential impact by students' prior achievement score, X = 1 for students with prior achievement scores that were 1 standard deviation above the district mean, and X = 0 for students with prior achievement scores at district mean. For analyses of differential impact by the other student characteristics, X = 1 for female students, students eligible for free- or reduced-price lunch, English learners, special education students, and non-White students; X = 0 otherwise.

Appendix C. Supporting Exhibits for Baseline Equivalence Analyses for Year 1 Student Achievement Outcomes (All Six Study Districts)

Exhibit C1. Prior Achievement Scores for Year 1 Student Achievement Outcomes, by Study Group

Prior (Spring 2021) Achievement Measure	Treatment Group		Control Group		Treatment–Control Difference	Standard Error	Effect Size	p-value
	Mean	SD	Mean	SD				
ELA EOG score	-0.13	0.97	-0.03	0.93	-0.10	0.18	-0.11	0.563
ELA (EOC+EOG) score	-0.21	1.01	-0.25	0.97	0.05	0.19	0.05	0.801
Math EOG score	-0.14	0.92	0.03	0.93	-0.17	0.10	-0.19	0.067
Math (EOC+EOG) score	-0.08	0.92	-0.02	0.95	-0.07	0.10	-0.07	0.499
Overall EOG score	-0.12	0.97	0.02	0.96	-0.14	0.09	-0.14	0.132
Overall (EOC+EOG) score	-0.13	0.99	-0.11	0.98	-0.01	0.09	-0.02	0.872

Note. See Exhibit C2 for sample size information. The treatment group means are unadjusted means; the control group means were computed based on the unadjusted treatment group means and the estimated mean differences. Effect sizes were computed as Hedges' g. SD = standard deviation.

Exhibit C2. Sample Sizes for Baseline Equivalence Analyses for Year 1 Student Achievement Outcomes, by Study Group

Prior (Spring 2021) Achievement Measure	Treatment Group		Control Group	
	N of Teachers	N of Students	N of Teachers	N of Students
ELA EOG score	15	774	16	645
ELA (EOC+EOG) score	19	1,283	17	721
Math EOG score	19	966	21	1,263
Math (EOC+EOG) score	21	1,291	22	1,362
Overall EOG score	36	1,386	38	1,596
Overall (EOC+EOG) score	43	2,190	43	1,762