Oak Grove Analysis

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Overview

What was done

- We compared students taught by trained teachers versus untrained teachers.
- For CAASPP, we examined math achievement using prior-year CAASPP scale score as a baseline adjustment where available (ANCOVA).
- For i-Ready, we examined student within-year growth and prioritized diagnostic gain for the headline summary.
- Because few schools contained both trained and untrained exposure in the analytic samples, school fixed effects are not emphasized in the main results.

Analysis map

Research question	Panel	Outcomes	Controls
Do students taught by trained teachers show better math achievement than students taught by untrained teachers?	2022–23 CAASPP math compared for trained vs untrained; adjusts for prior-year (2021–22) CAASPP math scale score.	CAASPP Math scale score (2022–23) with 2021–22 as baseline (ANCOVA)	Prior-year CAASPP scale score; Grade; Sex (if available); Hispanic/Latino; English learner; Special education; Economic disadvantage; Reporting ethnicity indicators; Teacher gender; Teacher experience; Baseline overall scale score
In 2023–24, is achievement higher for students taught that year by a teacher trained in 2022–23?	2023–24 CAASPP math compared for current-exposure trained vs untrained; main spec is cross-sectional (prior-year CAASPP available for context).	CAASPP Math scale score (2023–24)	Grade; Hispanic/Latino; English learner; Special education; Economic disadvantage; Reporting ethnicity indicators, Teacher gender; Teacher experience; Baseline overall scale score
In 2023–24, is achievement higher for students who had a trained teacher in 2022–23 (carryover)?	2023–24 CAASPP math compared for delayed-exposure trained vs untrained; main spec is cross-sectional (prior-year CAASPP available for context).	CAASPP Math scale score (2023–24)	Grade; Hispanic/Latino; English learner; Special education; Economic disadvantage; Reporting ethnicity indicators; Teacher gender; Teacher experience; Baseline overall scale score
Do students taught by trained teachers show more growth in math ability than students taught by untrained teachers?	Within 2022–23, compares students taught by trained vs untrained teachers; growth uses baseline vs most-recent diagnostic within the year.	Diagnostic gain; Annual Typical Growth; Annual Stretch Growth; % progress to Typical; % progress to Stretch; Mid-on-grade-level; Domain (Number & Operations, Algebra, Measurement & Data, Geometry)	Grade group; Sex; Race; Hispanic/Latino; English learner; Special education; Teacher gender; Teacher experience; Baseline overall scale score (i-Ready)
In 2023–24, does being taught that year by a teacher trained in 2022–23 relate to greater growth?	Within 2023–24, compares students taught in 2023–24 by previously-trained teachers vs students taught by untrained teachers; growth uses baseline vs most-recent YTD diagnostic.	Diagnostic gain; Annual Typical Growth; Annual Stretch Growth; % progress to Typical; % progress to Stretch; Mid-on-grade-level; Domain (Number & Operations, Algebra, Measurement & Data, Geometry)	Grade; Sex; Race; Hispanic/Latino; English learner; Special education; Teacher gender; Teacher experience; Baseline overall scale score (i-Ready)
In 2023–24, do students previously taught by a trained teacher in 2022–23 show greater growth (carryover effect)?	Within 2023–24, compares students who had trained teachers in 2022–23 vs students who did not; growth uses baseline vs most-recent YTD diagnostic in 2023–24.	Diagnostic gain; Annual Typical Growth; Annual Stretch Growth; % progress to Typical; % progress to Stretch; Mid-on-grade-level; Domain (Number & Operations, Algebra, Measurement & Data, Geometry)	Grade; Sex; Race; Hispanic/Latino; English learner; Special education; Teacher gender; Teacher experience; Baseline overall scale score (i-Ready)

Primary results

Analysis	Est.	CI low	CI high	p	N
CAASPP 2022-23 Math Achievement (exposure: taught by teacher trained in 2022-23)	12.619	-8.412	33.650	0.2570	1670
CAASPP 2023-24 Math Achievement (exposure: taught in 2023–24 by a teacher who had been trained in 2022–23)	0.930	-37.418	39.279	0.9630	1513
CAASPP 2023-24 Math Achievement (exposure: taught by a trained teacher in 2022-23)	-1.528	-21.059	18.003	0.8800	3105
i-Ready 2022-23 student within year growth (exposure: taught by teacher trained in 2022-23)	-3.390	-7.144	0.364	0.0786	3771
i-Ready 2023-24 student within year growth (exposure: taught in 2023–24 by a teacher who had been trained in 2022–23)	-2.197	-6.894	2.501	0.3620	2376
i-Ready 2023-24 student within year growth (exposure: taught by a trained teacher in 2022-23)	3.327	-2.909	9.563	0.2980	2540

Main takeaways

- CAASPP 2022-23 Math Achievement: Students taught by teachers trained in 2022–23 scored higher than students with untrained teachers by an estimated 12.619 (95% CI −8.412 to 33.650), p = 0.2568, N = 1670.
- CAASPP 2023-24 Math Achievement (taught in 2023–24 by a teacher who had been trained in 2022–23): Students taught by trained teachers performed about the same as those with untrained teachers, estimated difference 0.931 (95% CI −37.418 to 39.279), p = 0.9627, N = 1513.
- CAASPP 2023-24 Math Achievement (taught by a trained teacher in 2022-23): Students taught by trained teachers scored slightly lower than those with untrained teachers, estimated −1.528 (95% CI −21.059 to 18.003), p = 0.88, N = 3105.
- i-Ready 2022-23 within-year growth: Students taught by teachers trained in 2022-23 showed lower within-year growth by an estimated −3.390 (95% CI −7.144 to 0.364), p = 0.0786, N = 3771.
- i-Ready 2023-24 within-year growth (taught in 2023–24 by a teacher who had been trained in 2022–23): Students taught by trained teachers showed lower growth by an estimated −2.197 (95% CI −6.894 to 2.501), p = 0.3618, N = 2376.
- i-Ready 2023-24 within-year growth (taught by a trained teacher in 2022-23): Students taught by trained teachers showed higher growth by an estimated 3.327 (95% CI −2.909 to 9.563), p = 0.2978, N = 2540.

Synthesis: Across the six comparisons, point estimates vary in direction and are generally small relative to their uncertainty; confidence intervals include both positive and negative values and none of the p-values indicate clear evidence of an effect. In short, the data do not provide consistent or precise evidence that the training produced clear improvements in these outcomes.

Results by analysis run

Achievement (CAASPP)

A1. CAASPP 2022-23 Math Achievement (exposure: taught by teacher trained in 2022-23)

Comparing students whose 2022–23 teacher was trained versus untrained (exposure defined as "Trained in 2022–23"), the outcome examined was the CAASPP Math scale score. There were 136 students taught by trained teachers and 2,662 taught by untrained teachers. The ANCOVA estimate indicates a positive difference of 12.62 scale-score points (95% CI: −8.41 to 33.65), p = 0.2568, reflecting considerable uncertainty. The primary specification clusters standard errors by school.

Full primary model results

Term	Estimate	Std. Error	CI low	CI high	p
Intercept	490.988	45.743	401.332	580.645	<0.001
Trained teacher (current)	12.619	10.730	-8.412	33.650	0.25700
Prior-year score	0.799	0.020	0.760	0.838	<0.001
Grade: 4	24.343	5.930	12.721	35.965	<0.001
Grade: 5	13.475	5.877	1.956	24.995	0.03570
Student sex: Male	2.798	2.427	-1.959	7.556	0.26600
Hispanic/Latino: Yes	13.166	12.055	-10.461	36.793	0.29100
English learner: Yes	-8.116	3.730	-15.428	-0.805	0.04490
Special education: Yes	1.239	8.184	-14.801	17.278	0.88200
Economic disadvantage: Yes	-5.564	2.890	-11.228	0.100	0.07220
American Indian/Alaska Native	14.810	12.564	-9.814	39.435	0.25600
Asian	39.812	12.621	15.074	64.549	0.00614
Black/African American	-5.001	16.128	-36.612	26.611	0.76100
Filipino	26.813	12.120	3.058	50.568	0.04180
Native Hawaiian/Pacific Islander	26.797	12.306	2.676	50.917	0.04480
Two or more / not reported	30.992	14.275	3.012	58.972	0.04530

Note: N = 1,670; R^2 = 0.732; Adj. R^2 = 0.730; Residual df = NA

A2. CAASPP 2023-24 Math Achievement (exposure: taught in 2023–24 by a teacher who had been trained in 2022–23)

This analysis compares students in 2023–24 whose 2023–24 teacher had been trained in 2022–23 to students whose 2023–24 teacher had not been trained, with the outcome CAASPP Math scale score. There were 98 students in the treated group and 1417 students in the untreated group. The estimated difference in CAASPP Math scale score was 0.9305 points (95% CI: −37.4178 to 39.2788; n = 1513), p = 0.9627, indicating a very imprecise and non-significant estimate. Standard errors were clustered by school, and school fixed effects were not emphasized due to limited within-school treated/control overlap.

Full primary model results

Term	Estimate	Std. Error	CI low	CI high	p
Intercept	2414.236	14.776	2385.275	2443.198	<0.001
Trained teacher (current)	0.930	19.565	-37.418	39.279	0.96300

Grade: 4	46.238	11.134	24.416	68.060	<0.001
Grade: 5	71.345	8.195	55.283	87.406	<0.001
Grade: 6	87.148	15.579	56.613	117.683	<0.001
Hispanic/Latino: Yes	21.847	11.018	0.252	43.442	0.06600
English learner: Yes	-65.628	5.764	-76.925	-54.331	<0.001
Special education: Yes	-81.599	9.447	-100.114	-63.084	<0.001
Economic disadvantage: Yes	-25.936	4.891	-35.522	-16.351	<0.001
American Indian/Alaska Native	-19.633	18.525	-55.943	16.677	0.30600
Asian	103.522	13.405	77.248	129.796	<0.001
Black/African American	41.535	46.277	-49.168	132.238	0.38400
Filipino	57.252	15.083	27.689	86.816	0.00176
Native Hawaiian/Pacific Islander	63.542	11.999	40.024	87.060	<0.001
Two or more / not reported	64.367	15.720	33.555	95.179	<0.001

Note: N = 1,513; $R^2 = 0.421$; Adj. $R^2 = 0.415$; Residual df = NA

A3. CAASPP 2023-24 Math Achievement (exposure: taught by a trained teacher in 2022-23)

This analysis compares students who had a teacher trained in 2022–23 to those who did not, focusing on 2023–24 CAASPP Math scale scores. There were 175 students in the trained group and 2,932 in the untrained group. The estimated difference (trained minus untrained) is -1.53 points, with a 95% confidence interval of -21.06 to 18.00 and p = 0.88, indicating substantial uncertainty. The primary specification clusters standard errors by school.

Full primary model results

Term	Estimate	Std. Error	CI low	CI high	p
Intercept	2415.924	13.586	2389.296	2442.553	<0.001
Trained teacher (current)	-1.528	9.965	-21.059	18.003	0.88000
Grade: 4	46.932	6.443	34.304	59.559	<0.001
Grade: 5	64.477	7.159	50.446	78.508	<0.001
Grade: 6	87.682	7.842	72.311	103.053	<0.001
Hispanic/Latino: Yes	17.879	11.865	-5.377	41.135	0.15100
English learner: Yes	-56.578	5.730	-67.810	-45.346	<0.001
Special education: Yes	-87.201	11.031	-108.822	-65.580	<0.001
Economic disadvantage: Yes	-29.362	3.831	-36.870	-21.854	<0.001
American Indian/Alaska Native	79.576	43.463	-5.611	164.763	0.08580
Asian	104.528	12.655	79.723	129.332	<0.001
Black/African American	-9.413	17.102	-42.932	24.106	0.59000
Filipino	54.922	14.217	27.056	82.788	0.00138
Native Hawaiian/Pacific Islander	65.494	12.364	41.260	89.728	<0.001
Two or more / not reported	76.911	14.180	49.118	104.704	<0.001

Note: N = 3,105; $R^2 = 0.417$; Adj. $R^2 = 0.414$; Residual df = NA

Growth (i-Ready)

G1. i-Ready 2022-23 student within year growth (exposure: taught by teacher trained in 2022-23)

Within 2022–23, this analysis compares students whose 2022–23 teacher was trained in 2022–23 to students whose teacher was untrained. The outcome highlighted is Diagnostic gain (i-Ready); 199 students were in the treated group and 3,573 in the untreated group. The estimated difference in diagnostic gain is −3.39 (confidence interval −7.1444 to 0.3641; p = 0.0786), a negative point estimate with uncertainty that overlaps values near zero. The primary specification clusters standard errors by teacher.

Full primary model results

Term	Estimate	Std. Error	CI low	CI high	p
Intercept	72.903	9.083	55.100	90.706	<0.001
Trained teacher (current)	-3.390	1.915	-7.144	0.364	0.07860
Grade group: 3	0.125	1.528	-2.869	3.119	0.93500
Grade group: 4–5	-0.707	1.495	-3.637	2.224	0.63700
Student sex: male	1.255	0.516	0.243	2.267	0.01610
Student sex: Unknown	6.489	1.344	3.855	9.123	<0.001
Student race: Asian	-0.297	6.341	-12.726	12.131	0.96300
Student race: Black or African American	-5.269	6.633	-18.270	7.733	0.42800
Student race: Native Hawaiian or Other Pacific Islander	-3.748	7.196	-17.853	10.357	0.60300
Student race: Two or More Races	-1.487	6.456	-14.141	11.167	0.81800
Student race: White	-2.899	6.375	-15.394	9.596	0.65000
Student race: Unknown	-5.891	6.343	-18.324	6.542	0.35400
English learner: Y	-0.967	0.791	-2.517	0.584	0.22400
Special education: Y	-2.891	1.085	-5.018	-0.763	0.00850
Teacher gender: Male	-1.019	2.256	-5.441	3.403	0.65200
Teacher gender: Unknown	-3.356	1.202	-5.713	-0.999	0.00587
Baseline overall scale score	-0.111	0.014	-0.138	-0.084	<0.001

Note: N = 3,771; R^2 = 0.083; Adj. R^2 = 0.079; Residual df = NA

Other outcomes (top 25)

Outcome	Estimate	CI low	CI high	p	N
Annual Typical Growth (i-Ready)	-0.345	-1.116	0.426	0.38100	3771
Annual Stretch Growth (i-Ready)	-0.220	-0.725	0.285	0.39400	3771
% progress to Typical Growth (i-Ready)	-11.891	-30.323	6.542	0.20800	3771
% progress to Stretch Growth (i-Ready)	-9.075	-20.125	1.974	0.10900	3771
Mid-on-grade-level scale score (i-Ready)	-0.937	-3.600	1.726	0.49100	3771
Number & Operations domain (gain score)	-4.859	-9.385	-0.334	0.03680	3771
Number & Operations domain (scale score)	-3.447	-8.313	1.420	0.16700	3771
Algebra & Algebraic Thinking domain (gain score)	-4.838	-7.757	-1.918	0.00141	3771
Algebra & Algebraic Thinking domain (scale score)	-3.486	-6.579	-0.393	0.02850	3771
Measurement & Data domain (gain score)	-1.214	-7.326	4.897	0.69700	3771
Measurement & Data domain (scale score)	0.271	-5.747	6.289	0.93000	3771

Geometry domain (gain score)	-6.638	-12.536	-0.739	0.02880	3771
Geometry domain (scale score)	-4.515	-10.681	1.650	0.15300	3771

G2. i-Ready 2023-24 student within year growth (exposure: taught in 2023–24 by a teacher who had been trained in 2022–23)

This analysis compares students in 2023–24 who were taught that year by teachers trained in 2022–23 versus students taught by untrained teachers, measuring within-year growth from baseline to the most recent YTD diagnostic. The outcome is Diagnostic gain (i-Ready); 155 students were in the treated condition and 2,223 in the untreated condition. The estimated difference is -2.1966 (treated minus control), with a 95% CI of [-6.894, 2.5008] and p = 0.3618, indicating uncertainty around the negative point estimate. Standard errors are clustered by teacher (primary specification).

Full primary model results

Term	Estimate	Std. Error	CI low	CI high	p
Intercept	83.279	8.959	65.719	100.839	<0.001
Trained teacher (current)	-2.197	2.397	-6.894	2.501	0.36200
Grade group: 2	1.571	2.815	-3.946	7.087	0.57800
Grade group: 3	4.429	2.863	-1.182	10.040	0.12500
Grade group: 4	5.155	3.108	-0.936	11.246	0.10100
Grade group: 5	3.546	3.041	-2.415	9.507	0.24700
Grade group: 6	12.382	3.974	4.594	20.170	0.00244
Student sex: male	1.718	0.710	0.325	3.110	0.01750
Student sex: Unknown	-1.255	2.685	-6.519	4.008	0.64100
Student race: Asian	7.129	4.444	-1.581	15.839	0.11200
Student race: Black or African American	0.612	4.724	-8.647	9.871	0.89700
Student race: Native Hawaiian or Other Pacific Islander	-3.459	6.532	-16.261	9.343	0.59800
Student race: Two or More Races	0.563	4.416	-8.092	9.218	0.89900
Student race: White	3.278	4.422	-5.390	11.945	0.46000
Student race: Unknown	-15.402	4.677	-24.569	-6.234	0.00140
Hispanic/Latino: Y	16.380	1.807	12.838	19.923	<0.001
English learner: Y	-3.221	1.219	-5.611	-0.831	0.00968
Special education: Y	-4.255	1.516	-7.225	-1.284	0.00608
Teacher gender: Male	1.441	2.128	-2.730	5.613	0.50000
Teacher gender: Unknown	-2.780	1.530	-5.778	0.218	0.07240
Baseline overall scale score	-0.154	0.019	-0.192	-0.116	<0.001

Note: N = 2,376; R^2 = 0.105; Adj. R^2 = 0.098; Residual df = NA

Other outcomes (top 25)

Outcome	Estimate	CI low	CI high	p	N
Annual Typical Growth (i-Ready)	-0.264	-0.525	-0.004	0.0498	2376
Annual Stretch Growth (i-Ready)	-0.150	-0.655	0.354	0.5610	2376
% progress to Typical Growth (i-Ready)	-12.696	-39.278	13.885	0.3520	2376
% progress to Stretch Growth (i-Ready)	-6.836	-21.390	7.718	0.3600	2376
Mid-on-grade-level scale score (i-Ready)	0.000	0.000	0.000	1.0000	2376

Number & Operations domain (gain score)	-1.916	-8.553	4.721	0.5730	2376
Number & Operations domain (scale score)	-1.677	-8.166	4.813	0.6140	2376
Algebra & Algebraic Thinking domain (gain score)	-2.180	-8.574	4.214	0.5060	2376
Algebra & Algebraic Thinking domain (scale score)	-1.452	-7.815	4.910	0.6560	2376
Measurement & Data domain (gain score)	-4.385	-9.137	0.368	0.0738	2376
Measurement & Data domain (scale score)	-1.896	-6.796	3.004	0.4500	2376
Geometry domain (gain score)	-4.498	-11.618	2.623	0.2190	2376
Geometry domain (scale score)	-3.757	-11.248	3.734	0.3280	2376

G3. i-Ready 2023-24 student within year growth (exposure: taught by a trained teacher in 2022-23)

This analysis compares students who had a teacher trained in 2022–23 to students who did not, evaluating within-year growth in 2023–24. The outcome is Diagnostic gain (i-Ready). Eighty-five students were in the treated group and 2,457 in the untreated group. The estimated difference in diagnostic gain was 3.3273 (95% CI: −2.9088 to 9.5634; p = 0.2978), with standard errors clustered by teacher.

Full primary model results

Term	Estimate	Std. Error	CI low	CI high	p
Intercept	72.759	10.527	52.125	93.392	<0.001
Trained teacher (current)	3.327	3.182	-2.909	9.563	0.29800
Grade group: 2	-15.406	3.477	-22.221	-8.592	<0.001
Grade group: 3	6.265	1.730	2.874	9.657	<0.001
Grade group: 4	6.441	1.787	2.938	9.944	<0.001
Grade group: 5	4.991	1.613	1.829	8.152	0.00248
Grade group: 6	9.490	1.886	5.794	13.185	<0.001
Student sex: male	2.522	0.724	1.102	3.942	<0.001
Student race: Asian	1.117	7.277	-13.145	15.379	0.87800
Student race: Black or African American	-6.431	7.406	-20.947	8.085	0.38700
Student race: Native Hawaiian or Other Pacific Islander	-8.574	8.177	-24.601	7.453	0.29700
Student race: Two or More Races	-3.302	7.187	-17.389	10.786	0.64700
Student race: White	-2.972	7.244	-17.171	11.226	0.68200
Student race: Unknown	-4.800	7.211	-18.934	9.334	0.50700
English learner: Y	-1.075	1.080	-3.191	1.041	0.32100
Special education: Y	-0.374	1.961	-4.219	3.470	0.84900
Teacher gender: Male	1.987	2.792	-3.485	7.459	0.47800
Teacher gender: Unknown	-0.314	1.475	-3.205	2.576	0.83200
Baseline overall scale score	-0.123	0.018	-0.159	-0.087	<0.001

Note: N = 2,540; R^2 = 0.083; Adj. R^2 = 0.076; Residual df = NA

Other outcomes (top 25)

Outcome	Estimate	CI low	CI high	p	N
Annual Typical Growth (i-Ready)	-0.262	-0.536	0.011	0.0629	2540
Annual Stretch Growth (i-Ready)	-0.214	-0.762	0.335	0.4470	2540
% progress to Typical Growth (i-Ready)	13.775	-15.966	43.517	0.3660	2540

% progress to Stretch Growth (i-Ready)	9.242	-9.964	28.449	0.3480	2540
Mid-on-grade-level scale score (i-Ready)	0.000	0.000	0.000	1.0000	2540
Number & Operations domain (gain score)	4.997	-2.201	12.195	0.1760	2540
Number & Operations domain (scale score)	4.622	-2.484	11.728	0.2050	2540
Algebra & Algebraic Thinking domain (gain score)	6.648	-1.297	14.594	0.1040	2540
Algebra & Algebraic Thinking domain (scale score)	6.051	-2.499	14.601	0.1680	2540
Measurement & Data domain (gain score)	1.476	-6.089	9.042	0.7030	2540
Measurement & Data domain (scale score)	2.301	-5.320	9.921	0.5550	2540
Geometry domain (gain score)	-1.457	-8.169	5.256	0.6710	2540
Geometry domain (scale score)	-1.096	-8.846	6.654	0.7820	2540