Supplementary Online Content

This supplementary material has been provided by the authors to give readers additional information about their work.

eTable 1. Baseline School-Level Characteristics by Study Cohort

	Cohort 1	Cohort 2	Cohort 3
Number of Schools	41	41	38
Charter, N (%)	8 (19.5)	8 (19.5)	7 (18.4)
Pilot schools, N (%)	3 (7.3)	2 (4.9)	2 (5.3)
School Type, N (%)			
Elementary	15 (36.6)	16 (39.0)	14 (36.8)
Elementary/Middle	23 (56.1)	22 (53.7)	22 (57.9)
Middle	3 (7.3)	3 (7.3)	2 (5.3)
Black, mean % (SD)	84.0 (19.7)	81.9 (26.5)	83.9 (23.8)
White, mean % (SD)	8.1 (13.3)	9.7 (17.2)	9.0 (15.7)
Latinx, mean % (SD)	5.3 (9.0)	6.2 (14.8)	5.0 (10.5)
Asian, mean % (SD)	1.3 (3.1)	1.0 (1.4)	0.8 (1.7)
Male, mean % (SD)	53.0 (11.2)	50.7 (3.1)	49.3 (8.8)
ELL, mean % (SD)	5.3 (8.9)	4.3 (12.6)	3.3 (8.8)
SPED, mean % (SD)	14.2 (4.2)	14.6 (4.8)	13.6 (5.0)
FARM, mean % (SD)	89.4 (10.1)	88.9 (13.9)	87.1 (13.8)

FARM = free and reduced meals program; ELL = English Language Learner; SD = standard deviation;
SPED = special education

eTable 2. School Attrition Rate by Outcome Measure Period

Outcome Period	Subject	Test	Intervention Group			Control Group			Overall Custer Attrition Rate, %	Differential Cluster Attrition Rate, %
			Randomized	Attrited	Analyzed	Randomized	Attrited	Analyzed		
1-year Intervention Impact										
SY 2016-17	Reading	i-Ready	42	8	34	85	12	73	15.7	4.9
		PARCC	42	1	41	85	8	77	7.1	7
	Mathematics	i-Ready	42	8	34	85	13	72	16.5	3.8
		PARCC	42	1	41	85	7	78	6.3	5.9
SY 2017-18	Reading	i-Ready	42	9	33	43	11	32	23.5	4.2
		PARCC	42	1	41	43	6	37	8.2	11.6
	Mathematics	i-Ready	42	9	33	43	10	33	22.4	1.8
		PARCC	42	1	41	43	5	38	7.1	9.2
2-year Intervention Impact										
SY 2017-18	Reading	i-Ready	42	7	35	43	11	32	21.2	8.9
		PARCC	42	1	41	43	6	37	8.2	11.6
	Mathematics	i-Ready	42	6	36	43	10	33	18.8	9
		PARCC	42	1	41	43	5	38	7.1	9.2

SY = school year; PARCC = Partnership for Assessment of Readiness for College and Careers.

eTable 3. Student Retention Rate by Outcome Measure Period and Cohort

Outcome Period	Subject	Test	Cohort 1 (N=964)		Cohort 2 (N=775)		Cohort 3 (N=565)	
			Analyzed	Retention Rate (%)	Analyzed	Retention Rate (%)	Analyzed	Retention Rate (%)
1-year Intervention Impact								
SY 2016-17	Total analyzed		798	82.8	591	76.3	428	75.8
	Reading	i-Ready	695	72.1	465	60.0	359	63.5
		PARCC	781	81.0	576	74.3	416	73.6
	Mathematics	i-Ready	689	71.5	462	59.6	365	64.6
		PARCC	788	81.7	583	75.2	421	74.5
SY 2017-18	Total analyzed		n/a	n/a	761	98.2	559	98.9
	Reading	i-Ready	n/a	n/a	422	54.5	332	58.8
		PARCC	n/a	n/a	591	76.3	425	75.2
	Mathematics	i-Ready	n/a	n/a	579	74.7	460	81.4
		PARCC	n/a	n/a	750	96.8	555	98.2
2-year Intervention Impact								
SY 2017-18	Total analyzed		876	90.9	n/a	n/a	559	98.9
	Reading	i-Ready	584	60.6	n/a	n/a	332	58.8
		PARCC	709	73.5	n/a	n/a	425	75.2
	Mathematics	i-Ready	737	76.5	n/a	n/a	460	81.4
		PARCC	862	89.4	n/a	n/a	555	98.2

SY = school year; PARCC = Partnership for Assessment of Readiness for College and Careers; n/a = not applicable

Cohort-specific student retention rates calculated as number of students included in a specific testing outcome analysis in a cohort divided by number of students included in any outcome analysis in same cohort.

eTable 4. Baseline Student-Level Characteristics by Study Cohort

	Cohort 1	Cohort 2	Cohort 3
Students (N)	964	775	565
Age (years), mean ± SD	9.5 (1.4)	9.4 (1.4)	9.3 (1.5)
Black	752 (78.0)	588 (75.9)	449 (79.5)
White	163 (16.9)	164 (21.2)	105 (18.6)
Latinx	154 (16.0)	137 (17.7)	97 (17.2)
Asian	20 (2.1)	8 (1.0)	2 (0.4)
Female	501 (52.0)	436 (56.3)	323 (57.2)
ELL	84 (8.7)	64 (8.3)	56 (9.9)
SPED	173 (17.9)	130 (16.8)	103 (18.2)
Eye Examination Findings			
Wearing Rx at baseline	38 (3.9)	2 (0.3)	42 (7.4)
Refractive Error			
Emmetropia	249 (25.8)	217 (28.0)	102 (18.1)
Hyperopia	140 (14.5)	100 (12.9)	61 (10.8)
Myopia	575 (59.6)	458 (59.1)	402 (71.2)
Astigmatism	408 (42.3)	282 (36.4)	224 (39.6)

ELL = English Language Learner; SPED = special education; Rx = eyeglasses

Data presented as N (%) unless otherwise indicated.

Student race/ethnicity was not mutually exclusive, and students may have classified as more than one race/ethnicity. Percentages by student race/ethnicity may sum to more than 100%. Age was calculated as of the start of the study, on August 1, 2016.

eTable 5. Baseline Academic Test Outcome Equivalence

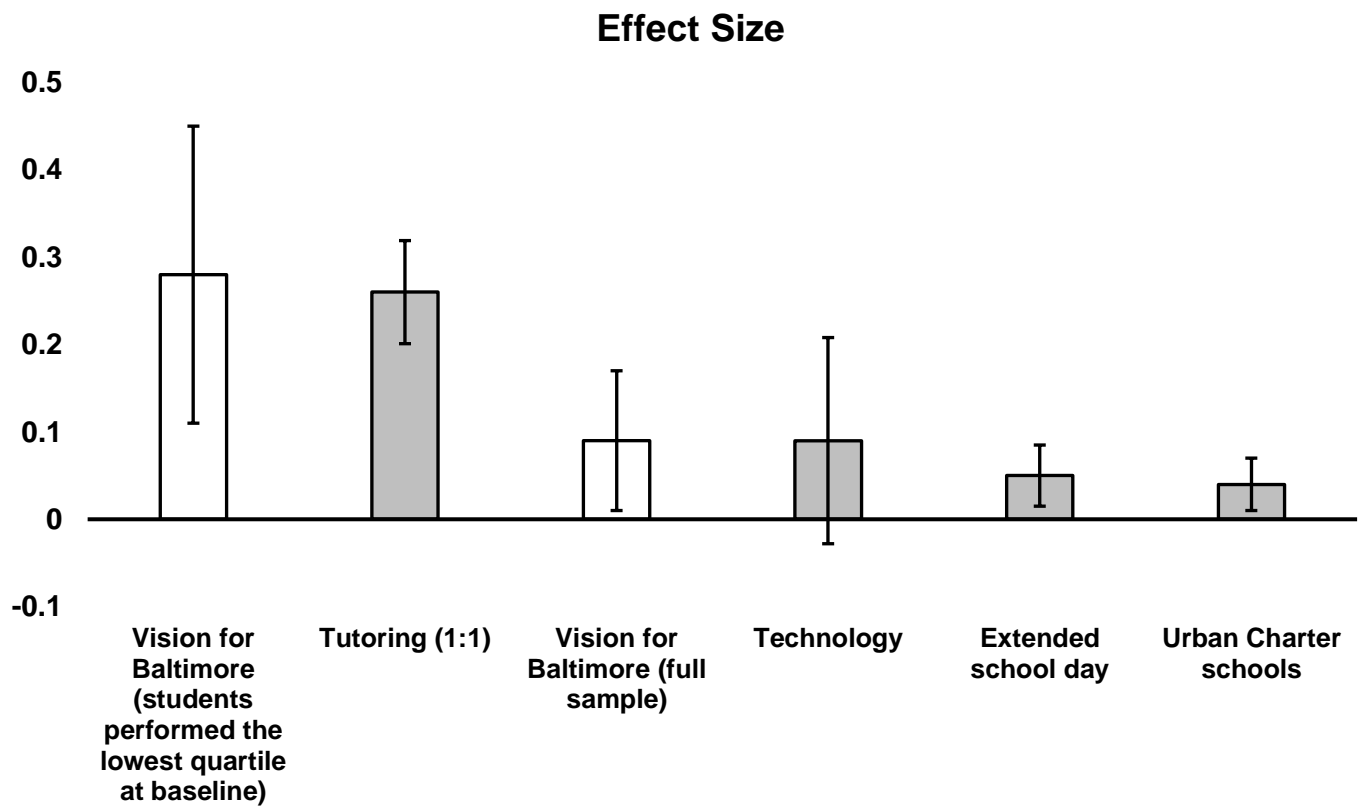| Outcome Period	Subject	Test	Intervention Schools N	Control Schools N	Intervention Students n	Control Students n	Effect Size [a]
1-year Intervention Impact							
SY 16-17	Reading	i-Ready	34	73	695	824	-0.06
		PARCC	41	77	781	992	-0.12
	Mathematics	i-Ready	34	72	689	827	-0.08
		PARCC	41	78	788	1004	-0.07
SY 17-18	Reading	i-Ready	33	32	422	332	+0.16
		PARCC	41	37	591	425	0.00
	Mathematics	i-Ready	33	33	579	460	+0.05
		PARCC	41	38	750	555	0.00
2-year Intervention Impact							
SY 17-18	Reading	i-Ready	35	32	584	332	0.00
		PARCC	41	37	709	425	-0.12
	Mathematics	i-Ready	36	33	737	460	+0.04
		PARCC	41	38	862	555	-0.05

SY = school year; PARCC = Partnership for Assessment of Readiness for College and Careers.

[a] Effect size: the difference in score on a particular academic test between the intervention and control groups measured in standard deviation units.

Baseline achievement for the PARCC analyses included students' PARCC scores in the same subject in spring 2016, or i-Ready beginning-of-the-year scores in fall 2016 when students were missing prior PARCC

scores. A dummy variable was added to the model to indicate which pretest was used, as well as an interaction term between the dummy variable and students' beginning-of-the-year i-Ready score. Baseline achievement for the i-Ready analyses included students' i-Ready beginning-of-the-year scores in fall 2016 in the same subject.

eFigure. Comparison of Effect Size for V4B i-Ready Reading at 1 Year vs Common Educational Interventions

Effect Size

Effect size: the difference in score on a particular academic test between the intervention and control groups measured in standard deviation units.