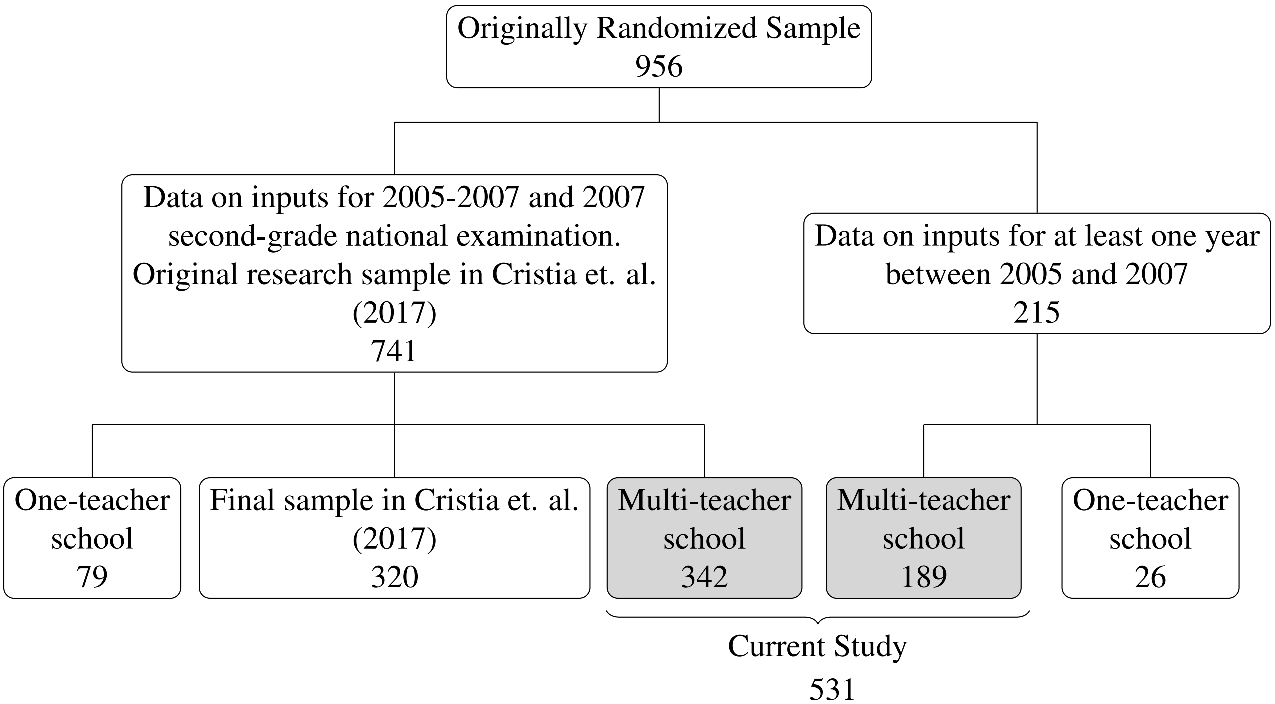
Appendix

Appendix A: Supplemental Figures and Tables

Figure A.1: Study Sample



Notes: This figure schematizes the sample selection. The originally randomized sample included 956 primary schools that were public, rural, multigrade, had administrative data on inputs for at least one year between 2005 and 2007, and were in the poorest districts within each region. Cristia et al. (2017) further restricted their original research sample to schools with administrative data on inputs for the years 2005 to 2007 and that participated in the 2007 second-grade national examination (N=741). After this, they excluded 79 one-teacher schools. Finally, due to budget constraints, they focused on schools in the eight largest regions (in terms of schools from the original sample) that had achieved at least 80 percent of coverage in the treatment group by August 2009. This delivers their final sample of 320 schools. Nonetheless, the coverage restriction was ultimately not binding as, by the end of 2009, more than 93 percent of all treated schools had been covered with almost a one-to-one ratio of OLPC XO laptops per student. Consequently, full program take-up occurred in parallel for all treated schools (both within and beyond the sample of Cristia et al. (2017)) in a way that full saturation was achieved by the end of year 2009. As shown in the figure, for the current study, we exclude the following schools from the originally randomized sample: all 105 one-teacher schools and the 320 schools studied in Cristia et al. (2017). This delivers the sample of 531 schools analyzed in the current study.

Table A.1: Effects on School-Level XO Computers and Internet by Year

Year:	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2009-2019
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Has XO	0.924***	0.840***	0.008	-0.003	-0.003	-0.003	-0.003	-0.003	-0.003	-0.003	-0.003	0.159***
	(0.017)	(0.023)	(0.010)	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)	(0.005)
Control mean	0.009	0.111	0.987	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	0.828
Observations	531	531	531	531	531	531	531	531	531	531	531	5,841
XO per student	0.908***	0.893***	0.703***	0.646***	0.611***	0.559***	0.506***	0.460***	0.426***	0.354***	0.345***	0.583***
	(0.018)	(0.018)	(0.018)	(0.018)	(0.019)	(0.021)	(0.022)	(0.023)	(0.024)	(0.026)	(0.026)	(0.016)
Control mean	0.009	0.023	0.220	0.275	0.294	0.333	0.339	0.337	0.363	0.391	0.398	0.271
Observations	531	531	531	528	531	529	529	526	527	526	527	5,816
Has internet	0.008	-0.005	0.044*	0.010	0.049**	0.030	0.015	0.054	0.010	0.027	0.019	0.024
	(0.005)	(0.014)	(0.025)	(0.032)	(0.022)	(0.030)	(0.029)	(0.039)	(0.035)	(0.033)	(0.035)	(0.015)
Control mean	0.000	0.027	0.058	0.124	0.036	0.113	0.121	0.219	0.141	0.138	0.183	0.105
Observations	502	488	508	516	503	520	518	469	434	526	513	5,497

Notes: For each outcome, this table presents (a) the estimated coefficient and standard error on the treatment indicator from OLS regressions that control for randomization strata fixed effects, (b) the control group mean, and (c) the number of school-level observations. Regressions for individual years control for randomization strata fixed effects. Pooled regressions control for randomization strata by year fixed effects. ***p<0.01, **p<0.05, *p<0.1

Table A.2: Balance on Trends in Baseline Academic Performance

	Second grade mathematics	Second grade reading
	(1)	(2)
Treated	-0.042	-0.057
	(0.090)	(0.087)
Post 2007	0.041	0.037
	(0.098)	(0.090)
Treated · Post 2007	-0.043	0.062
	(0.122)	(0.115)
Observations	774	780

Notes: The table shows estimated effects from school-year-level regressions where individual-level performance was first standardized with zero mean and unit variance for the control group and then aggregated at the school level mean. Results correspond to a difference-in-difference estimation for years 2007-2008 between treated and control schools. We show the estimated coefficients and standard errors on the treatment indicator (Treated), an indicator for year 2008 (Post 2007) and the interaction of both from OLS regressions that control for randomization strata fixed effects and are weighted by the number of students who took the examination in each school-year. The number of school-year observations are shown below the estimates. Estimated standard errors are clustered at the primary school level. ***p<0.01, **p<0.05, *p<0.1.

Table A.3: Effects on School-Level Desktops, Other Laptops, and Computer Lab by Year

Year:	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2009-2019
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Has desktop	0.049	0.026	0.003	-0.001	0.004	-0.036	0.010	0.023	0.003	-0.017	0.015	0.007
	(0.044)	(0.043)	(0.044)	(0.044)	(0.042)	(0.041)	(0.043)	(0.041)	(0.041)	(0.041)	(0.040)	(0.023)
Control mean	0.446	0.612	0.625	0.637	0.599	0.639	0.563	0.710	0.750	0.677	0.700	0.631
Observations	502	488	508	516	503	520	518	469	434	526	513	5,497
Desktops per student	0.002	0.019**	0.020	0.010	0.001	-0.015	0.004	-0.002	-0.038	-0.007	-0.028	-0.003
	(0.003)	(0.009)	(0.016)	(0.013)	(0.010)	(0.017)	(0.023)	(0.020)	(0.037)	(0.028)	(0.026)	(0.012)
Control mean	0.022	0.037	0.054	0.058	0.062	0.096	0.091	0.125	0.181	0.159	0.193	0.097
Observations	502	488	508	515	503	520	518	469	434	525	513	5,495
Has other laptops			-0.005	-0.027	-0.034*	-0.006	-0.008	-0.024	-0.017	-0.029	-0.036	-0.021
			(0.016)	(0.022)	(0.020)	(0.023)	(0.033)	(0.035)	(0.036)	(0.030)	(0.033)	(0.014)
Control mean			0.027	0.066	0.059	0.074	0.290	0.324	0.354	0.427	0.448	0.228
Observations			508	516	503	520	518	469	434	526	513	4,507
Other laptops per student			0.001	0.000	0.000	0.001	-0.009	-0.009	0.001	0.001	0.002	-0.001
			(0.006)	(0.006)	(0.004)	(0.002)	(0.009)	(0.007)	(0.007)	(0.008)	(0.010)	(0.003)
Control mean			0.005	0.006	0.003	0.002	0.033	0.040	0.037	0.052	0.058	0.026
Observations			508	515	503	520	518	469	434	525	513	4,505
Has Computer lab					0.026	0.034	0.021	-0.044	0.016	-0.016	-0.017	-0.003
					(0.030)	(0.035)	(0.035)	(0.032)	(0.035)	(0.027)	(0.029)	(0.016)
Control mean					0.128	0.170	0.170	0.162	0.183	0.102	0.128	0.143
Observations					531	531	531	531	531	531	531	5,841
Total computers per student	0.909***	0.911***	0.723***	0.656***	0.613***	0.545***	0.500***	0.447***	0.406***	0.348***	0.317***	0.580***
	(0.018)	(0.020)	(0.025)	(0.023)	(0.022)	(0.028)	(0.035)	(0.035)	(0.042)	(0.044)	(0.043)	(0.022)
Control mean	0.029	0.058	0.276	0.337	0.355	0.429	0.461	0.485	0.541	0.601	0.645	0.383
Observations	531	531	531	528	531	529	529	526	527	526	527	5,816

Notes: For each outcome, this table presents (a) the estimated coefficient and standard error on the treatment indicator from OLS regressions that control for randomization strata fixed effects, (b) the control group mean, and (c) the number of school-level observations. Regressions for individual years control for randomization strata fixed effects. Pooled regressions control for randomization strata by year fixed effects. Blank cells denote missing information for the measured characteristic. Total computers per student considers XO laptops, desktops, and other non-XO laptops. ***p<0.01, **p<0.05, *p<0.1

Table A.4: Effects on Other School Characteristics by Year

Year:	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2009-2019
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Electricity	-0.027	0.035	-0.001	0.012	-0.016	0.004	0.002	-0.001	-0.007		0.005	0.001
	(0.027)	(0.024)	(0.022)	(0.019)	(0.020)	(0.015)	(0.017)	(0.014)	(0.019)		(0.016)	(0.011)
Control mean	0.878	0.909	0.929	0.942	0.955	0.965	0.961	0.970	0.957		0.965	0.949
Observations	496	488	508	516	503	520	518	522	526		513	5,620
Piped water	-0.082*	-0.013	-0.050	0.033	-0.051	-0.007	-0.038	-0.044	-0.055	-0.001	-0.051	-0.033
	(0.045)	(0.044)	(0.043)	(0.043)	(0.042)	(0.042)	(0.040)	(0.039)	(0.042)	(0.044)	(0.044)	(0.028)
Control mean	0.549	0.612	0.589	0.571	0.604	0.583	0.667	0.704	0.654	0.517	0.396	0.586
Observations	502	488	508	516	503	520	518	522	526	526	513	5,642
Science lab	0.001	0.008	-0.003	0.003	0.005	-0.002	0.009	0.004	0.008	0.016	0.029	0.007
	(0.011)	(0.014)	(0.014)	(0.011)	(0.006)	(0.012)	(0.014)	(0.016)	(0.014)	(0.014)	(0.018)	(0.009)
Control mean	0.009	0.018	0.022	0.013	0.005	0.017	0.017	0.026	0.021	0.017	0.022	0.017
Observations	497	488	508	516	503	520	518	522	526	526	513	5,637
Library	0.091**	-0.038	0.088**	0.047	0.073*	0.061	0.008	0.017	-0.006	-0.004	-0.017	0.029
	(0.038)	(0.044)	(0.043)	(0.032)	(0.041)	(0.042)	(0.042)	(0.033)	(0.037)	(0.039)	(0.041)	(0.023)
Control mean	0.180	0.320	0.268	0.115	0.257	0.296	0.325	0.142	0.209	0.263	0.274	0.241
Observations	497	488	508	516	503	520	518	522	526	526	513	5,637
Students per teacher	0.009	-0.014	0.067	-1.042*	0.014	-0.428	0.230	0.438	0.296	-0.058	0.200	-0.028
	(0.479)	(0.474)	(0.461)	(0.613)	(0.431)	(0.415)	(0.422)	(0.355)	(0.615)	(0.334)	(0.329)	(0.300)
Control mean	19.849	18.757	15.954	15.755	13.676	13.174	12.293	11.164	14.016	10.531	10.121	14.123
Observations	531	531	531	528	531	529	529	526	501	526	526	5,789
Fraction of transferred students	0.001	-0.007	-0.009	0.002	0.001	0.003	0.000	-0.000	-0.006	-0.004	-0.004	-0.002
	(0.005)	(0.005)	(0.014)	(0.004)	(0.005)	(0.006)	(0.008)	(0.005)	(0.005)	(0.006)	(0.010)	(0.003)
Control mean	0.022	0.029	0.056	0.024	0.021	0.022	0.032	0.031	0.039	0.041	0.053	0.034
Observations	531	531	531	528	531	529	529	526	527	526	527	5,816
School enrollment	0.813	-0.125	-1.194	0.002	0.053	-0.183	-0.029	0.306	0.492	0.511	1.438	0.188
	(1.988)	(2.043)	(2.107)	(2.126)	(2.165)	(2.207)	(2.341)	(2.285)	(2.452)	(2.489)	(2.514)	(2.083)
Control mean	61.336	59.621	53.749	48.180	45.179	41.549	39.417	37.730	35.769	34.442	33.419	44.599
Observations	531	531	531	528	531	529	529	526	527	526	527	5,816

Notes: For each outcome, this table presents (a) the estimated coefficient and standard error on the treatment indicator from OLS regressions that control for randomization strata fixed effects, (b) the control group mean, and (c) the number of school-level observations. Regressions for individual years control for randomization strata fixed effects. Pooled regressions control for randomization strata by year fixed effects. Blank cells denote missing information for the measured characteristic. ***p<0.01, **p<0.05, *p<0.1

Table A.5: Effects on Technology Access, Academic Achievement, and IT Support

	Control Mean	Effect	N	Respondent
	(1)	(2)	(3)	(4)
Panel A: Technology access				
Computers				
Student has own XO laptop in school	0.291	0.448***	2,129	student
		(0.046)		
Teacher has own XO laptop in school	0.133	0.321***	167	teacher
		(0.069)		
Student takes the XO laptop home	0.019	0.194***	2,142	student
		(0.036)		
Student has non-XO laptop or computer at home	0.100	0.018	2,137	student
		(0.017)		
Internet				
School has internet	0.057	0.057	140	principal
		(0.047)		
Student has internet at home	0.026	-0.002	2,127	student
		(0.007)		
Panel B: Students' academic performance				
Mathematics	0.000	0.061	2,123	student
		(0.095)		
Reading	0.000	0.040	2,144	student
		(0.086)		
Panel C: IT support for teachers				
Received visit from IT specialist	0.096	0.102*	168	teacher
		(0.054)		
Training in computer or laptop utilization	0.060	-0.007	168	teacher
		(0.035)		
Advise on use (after being trained)	0.048	-0.021	168	teacher
		(0.029)		
IT support (repair or maintenance)	0.036	0.085**	168	teacher
		(0.040)		

Notes: Column 1 displays control group means. Column 2 displays estimated coefficients and standard errors on the treatment indicator from OLS regressions that control for randomization strata fixed effects. Column 3 displays the number of observations in each regression. Column 4 displays the respondent for each outcome analyzed. Data corresponds to the survey implemented by the team in the year 2013. Estimated standard errors, reported in parentheses, are clustered at the primary school level. ***p<0.01, **p<0.05, *p<0.1.

Table A.6: Effects on Alternative Definitions of School-Level Grade Progression by Year

Year:	2009	2010	2011	2012	2013	2014	2015	2016	2009-2016
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Panel A: Denominator is enrollment at the beginning of the academic year (ratio is capped at 1)									
Effect	-0.009	-0.020*	-0.021**	-0.003	-0.007	0.000	-0.014*	-0.003	-0.010**
	(0.011)	(0.012)	(0.010)	(0.009)	(0.010)	(0.009)	(0.008)	(0.009)	(0.005)
Control mean	0.859	0.825	0.857	0.853	0.865	0.893	0.920	0.912	0.869
Observations	530	531	531	528	531	529	529	525	4,234
Panel B: Denominator is enrollment at the beginning of the academic year (ratio is not capped)									
Effect	-0.021	-0.022*	-0.021**	-0.009	-0.006	0.003	-0.013	-0.006	-0.013**
	(0.018)	(0.012)	(0.010)	(0.011)	(0.011)	(0.010)	(0.009)	(0.010)	(0.006)
Control mean	0.889	0.828	0.857	0.865	0.866	0.898	0.927	0.918	0.877
Observations	530	531	531	528	531	529	529	525	4,234
Panel C: Denominator is enrollment at the beginning of the academic year (missing if ratio >1)									
Effect	0.001	-0.018	-0.023**	-0.000	-0.008	0.002	-0.010	-0.002	-0.008
	(0.011)	(0.012)	(0.010)	(0.009)	(0.010)	(0.009)	(0.008)	(0.008)	(0.005)
Control mean	0.832	0.820	0.856	0.848	0.862	0.884	0.913	0.904	0.860
Observations	465	520	519	504	514	484	485	488	3,979
Panel D: Denominator is students in the end-of-year report (Promoted + Failed + Dropped Out + Transferred)									
Effect	0.006	-0.026**	-0.019*	-0.006	-0.007	0.000	-0.012	-0.001	-0.008
	(0.011)	(0.011)	(0.010)	(0.008)	(0.010)	(0.009)	(0.008)	(0.009)	(0.005)
Control mean	0.851	0.820	0.862	0.853	0.863	0.880	0.906	0.897	0.862
Observations	530	531	531	528	531	529	529	525	4,234
Panel E: Denominator is the maximum between enrollment and end-of-year report									
Effect	0.002	-0.020*	-0.021**	-0.001	-0.009	-0.001	-0.011	-0.004	-0.008
	(0.012)	(0.012)	(0.010)	(0.009)	(0.010)	(0.009)	(0.008)	(0.009)	(0.005)
Control mean	0.827	0.807	0.848	0.836	0.850	0.876	0.903	0.894	0.850
Observations	530	531	531	528	531	529	529	525	4,234

Notes: This table shows estimated effects on grade progression using alternative definitions. In all panels, the numerator of the grade progression ratio is the number of students promoted to the next grade at the end of the academic year who attended second to sixth grades. The different panels present alternative denominators and censoring approaches. Each panel shows (a) the estimated coefficients and standard errors on the treatment indicator from OLS regressions that control for randomization strata fixed effects, (b) the control group means, and (c) the number of observations. Regressions for individual years control for randomization strata fixed effects. Pooled regressions control for randomization strata by year fixed effects. Estimated standard errors are clustered at the primary school. Estimates are weighted by school (second - sixth grade) enrollment. ***p<0.01, **p<0.05, *p<0.1.

Table A.7: Effects on School-Level Grade Progression by Grade and Year

Year:	2009	2010	2011	2012	2013	2014	2015	2016	2009-2016
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Second grade									
Effect	0.011	-0.013	-0.017	0.010	-0.013	0.009	0.001	0.022	0.000
	(0.016)	(0.017)	(0.015)	(0.017)	(0.018)	(0.016)	(0.016)	(0.016)	(0.007)
Control mean	0.795	0.751	0.805	0.778	0.808	0.842	0.877	0.854	0.807
Observations	526	531	529	517	520	516	512	501	4,152
Third grade									
Effect	-0.017	-0.043**	-0.034**	-0.012	-0.010	0.018	-0.025*	-0.020	-0.019***
	(0.015)	(0.018)	(0.017)	(0.016)	(0.017)	(0.017)	(0.014)	(0.015)	(0.007)
Control mean	0.827	0.795	0.810	0.818	0.830	0.848	0.902	0.890	0.834
Observations	530	528	529	524	522	510	513	502	4,158
Fourth grade									
Fourth grade									
Effect	-0.017	-0.029*	-0.032**	-0.014	-0.005	-0.010	-0.016	-0.015	-0.018***
	(0.015)	(0.017)	(0.015)	(0.014)	(0.018)	(0.014)	(0.013)	(0.011)	(0.006)
Control mean	0.871	0.839	0.877	0.871	0.869	0.900	0.914	0.926	0.879
Observations	530	531	528	521	524	521	513	509	4,177
Fifth grade									
Effect	-0.002	-0.008	-0.024	0.015	0.008	-0.008	-0.027*	-0.012	-0.007
	(0.017)	(0.018)	(0.015)	(0.017)	(0.017)	(0.015)	(0.014)	(0.015)	(0.008)
Control mean	0.849	0.828	0.863	0.848	0.852	0.899	0.924	0.913	0.868
Observations	526	529	526	517	520	516	516	504	4,154
Sixth grade									
Effect	-0.012	-0.012	0.006	0.007	-0.027**	0.006	0.004	0.001	-0.004
	(0.016)	(0.017)	(0.013)	(0.015)	(0.012)	(0.012)	(0.009)	(0.009)	(0.006)
Control mean	0.895	0.897	0.912	0.904	0.941	0.941	0.953	0.950	0.922
Observations	526	526	527	520	520	515	512	508	4,154
Second - sixth grade									
Effect	-0.009	-0.020*	-0.021**	-0.003	-0.007	0.000	-0.014*	-0.003	-0.010**
	(0.011)	(0.012)	(0.010)	(0.009)	(0.010)	(0.009)	(0.008)	(0.009)	(0.005)
Control mean	0.859	0.825	0.857	0.853	0.865	0.893	0.920	0.912	0.869
Observations	530	531	531	528	531	529	529	525	4,234

Notes: This table shows estimated effects on grade progression for each grade. In all panels, the numerator of the grade progression ratio is the number of students promoted to the next grade at the end of the academic year; while the denominator is the number of students enrolled in each grade at the beginning of the academic year. When the ratio exceeded unity, it was capped at 1. Each panel shows (a) the estimated coefficients and standard errors on the treatment indicator from OLS regressions that control for randomization strata fixed effects, (b) the control group means, and (c) the number of observations. Regressions for individual years control for randomization strata fixed effects. Pooled regressions control for randomization strata by year fixed effects. Estimated standard errors are clustered at the primary school. Estimates are weighted by school enrollment. ***p<0.01, **p<0.05, *p<0.1.

Table A.8: Effects on Individual-Level Academic Performance by Cohort

Cohort:	2009	2010	2011	2012	2013	2014	2015	2016	2009-2016
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Second grade mathematics									
Effect	-0.053	-0.105	0.022	0.043	-0.079	-0.196*	0.079	-0.093	-0.044
	(0.093)	(0.092)	(0.086)	(0.079)	(0.087)	(0.107)	(0.109)	(0.103)	(0.045)
Control mean	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Observations	3,314	3,221	3,161	3,308	2,872	2,427	2,368	2,190	22,861
Second grade reading									
Effect	-0.071	-0.123	0.015	-0.004	-0.050	-0.204*	0.029	-0.050	-0.056
	(0.088)	(0.076)	(0.083)	(0.075)	(0.086)	(0.115)	(0.101)	(0.108)	(0.045)
Control mean	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Observations	3,312	3,228	3,176	3,307	2,876	2,428	2,370	2,191	22,888
Fourth grade mathematics									
Effect						-0.182		-0.040	-0.108
						(0.115)		(0.090)	(0.072)
Control mean						0.000		0.000	0.000
Observations						1,524		1,683	3,207
Fourth grade reading									
Effect						-0.218*		-0.056	-0.133*
						(0.116)		(0.084)	(0.073)
Control mean						0.000		0.000	0.000
Observations						1,525		1,682	3,207
Eighth grade mathematics									
Effect	0.066	-0.006		0.063	-0.019				0.026
	(0.093)	(0.071)		(0.059)	(0.067)				(0.045)
Control mean	0.000	0.000		0.000	0.000				0.000
Observations	1,281	1,352		1,769	1,622				6,024
Eighth grade reading									
Effect	-0.101	-0.042		0.102	-0.035				-0.010
	(0.080)	(0.075)		(0.064)	(0.067)				(0.050)
Control mean	0.000	0.000		0.000	0.000				0.000
Observations	1,281	1,353		1,768	1,623				6,025
Index of academic performance									
Effect	-0.043	-0.107	0.014	0.033	-0.062	-0.201**	0.058	-0.084	-0.046
	(0.086)	(0.079)	(0.088)	(0.072)	(0.080)	(0.101)	(0.109)	(0.091)	(0.045)
Control mean	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Observations	3,316	3,229	3,176	3,311	2,876	2,428	2,370	2,192	22,898

Notes: This table shows estimated effects on primary education outcomes for each of the cohorts that were pooled in the estimations shown in Table 2. Cohorts (displayed in each column) indicate the year when students were enrolled in second grade. Mathematics and reading exams have been standardized with zero mean and unit variance for the control group. At the bottom we include an index of academic performance that averages the performance across all grades for which students took the national examination as detailed in the notes to Table 2. Regressions for individual years control for randomization strata fixed effects. Pooled regressions control for randomization strata by year fixed effects. Estimated standard errors are clustered at the primary school. ***p<0.01, **p<0.05, *p<0.1.

Table A.9: Effects on Individual-Level Educational Attainment by Cohort

Cohort:	2009	2010	2011	2012	2013	2014	2015	2009-2015
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Primary completion on time								
Effect	-0.005	-0.030*	-0.007	-0.042**	-0.020	-0.026	-0.011	-0.021*
	(0.018)	(0.018)	(0.018)	(0.017)	(0.017)	(0.017)	(0.015)	(0.011)
Control mean	0.604	0.632	0.663	0.692	0.734	0.763	0.788	0.695
Observations	3,750	3,999	4,342	4,494	4,368	3,986	3,577	28,516
Primary completion with up to one year of delay								
Effect	-0.010	-0.033**	-0.014	-0.021	-0.015	-0.011		-0.017*
	(0.016)	(0.014)	(0.014)	(0.013)	(0.011)	(0.012)		(0.009)
Control mean	0.813	0.829	0.858	0.861	0.895	0.910		0.862
Observations	3,750	3,999	4,342	4,494	4,368	3,986		24,939
Primary completion overall								
Effect	-0.006	0.002	0.001	-0.007	-0.010			-0.004
	(0.006)	(0.008)	(0.008)	(0.009)	(0.009)			(0.005)
Control mean	0.969	0.954	0.953	0.951	0.943			0.954
Observations	3,750	3,999	4,342	4,494	4,368			20,953
Secondary completion on time								
Effect	-0.010	-0.034*						-0.022
	(0.019)	(0.018)						(0.015)
Control mean	0.496	0.539						0.518
Observations	3,750	3,999						7,749
Secondary completion with up to one year of delay								
Effect	-0.021							-0.021
	(0.019)							(0.019)
Control mean	0.655							0.655
Observations	3,750							3,750
Applied to university on time								
Effect	-0.022*							-0.022*
	(0.013)							(0.013)
Control mean	0.167							0.167
Observations	3,750							3,750
Enrolled to university on time								
Effect	-0.010							-0.010
	(0.008)							(0.008)
Control mean	0.060							0.060
Observations	3,750							3,750
Completed years of education								
Effect	-0.013	-0.068	-0.067	-0.132**	-0.056	-0.048	-0.028	-0.061
	(0.088)	(0.080)	(0.077)	(0.066)	(0.061)	(0.047)	(0.031)	(0.044)
Control mean	9.834	9.680	9.197	8.393	7.569	6.696	5.729	8.205
Observations	3,750	3,999	4,342	4,494	4,368	3,986	3,577	28,516

Notes: This table shows estimated effects on primary education outcomes for each of the cohorts that were pooled in the estimations shown in Table 2. Cohorts (displayed in each column) indicate the year when students were enrolled in second grade. At the bottom we include the number of satisfactorily completed years of primary and secondary education by 2019. Regressions for individual years control for randomization strata fixed effects. Pooled regressions control for randomization strata by year fixed effects. Estimated standard errors are clustered at the primary school. ***p<0.01, **p<0.05, *p<0.1.

Table A.10: Effects on Overage at Entry (First Grade)

Year:	2009	2010	2011	2012	2013	2014	2015	2016	2009-2016
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Fraction of overage students									
Effect	-0.001	0.020	0.025	0.017	0.007	0.017	-0.007	0.004	0.010
	(0.018)	(0.019)	(0.020)	(0.020)	(0.026)	(0.025)	(0.024)	(0.015)	(0.010)
Cont. Mean	0.174	0.156	0.139	0.135	0.194	0.233	0.107	0.050	0.149
Observations	530	529	522	513	513	511	498	500	4,116

Notes: This table shows estimated effects on overage enrollment in first grade by year. Overage is the fraction of first grade students enrolled at 7 years of age or more. The school census collected enrollment by age with a cutoff date of June 30th up to the year 2014. Starting in 2015, the census varied the cutoff date to March 31st. Regressions for individual years control for randomization strata fixed effects. Pooled regressions control for randomization strata by year fixed effects. Estimated standard errors are clustered at the primary school. ***p<0.01, **p<0.05, *p<0.1.

Table A.11: Effects for Schools over Time Controlling for Baseline Outcomes

Year:	2009	2010	2011	2012	2013	2014	2015	2016	2009-2016
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Panel A: Second-grade mathematics performance									
Effect	-0.004	-0.067	0.011	0.002	-0.124	-0.206*	0.079	-0.140	-0.050
	(0.096)	(0.102)	(0.096)	(0.085)	(0.101)	(0.117)	(0.114)	(0.111)	(0.049)
Control mean	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Observations	360	335	329	380	335	299	254	220	2,512
Panel B: Second-grade reading performance									
Effect	-0.030	-0.088	0.005	-0.039	-0.068	-0.225*	0.025	-0.101	-0.062
	(0.092)	(0.084)	(0.091)	(0.080)	(0.099)	(0.126)	(0.110)	(0.110)	(0.047)
Control mean	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Observations	360	335	330	380	335	299	254	220	2,513
Panel C: Second-grade academic performance									
Effect	-0.024	-0.082	0.001	-0.016	-0.102	-0.229*	0.055	-0.131	-0.062
	(0.096)	(0.096)	(0.098)	(0.085)	(0.102)	(0.126)	(0.116)	(0.114)	(0.050)
Control mean	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Observations	360	335	330	380	335	299	254	220	2,513
Panel D: Grade progression									
Effect	-0.006	-0.016	-0.019**	-0.002	-0.007	0.002	-0.013*	-0.002	-0.009*
	(0.011)	(0.011)	(0.010)	(0.009)	(0.010)	(0.009)	(0.008)	(0.008)	(0.005)
Control mean	0.859	0.825	0.857	0.853	0.865	0.893	0.920	0.912	0.869
Observations	530	531	531	528	531	529	529	525	4,234

Notes: Panels A and B show estimated effects from school-level regressions where individual-level performance was first standardized with zero mean and unit variance for the control group and then aggregated at the school level mean. Panel C shows estimated effects from school-level regressions where individual-level performance for both subjects was first standardized with zero mean and unit variance for the control group and then averaged, re-standardized, and aggregated at the school level mean (as detailed in the notes to Figure 2). Panel D shows estimated effects on grade progression (defined as the ratio of students promoted to the next grade with respect to those enrolled at the beginning of the school year in second to sixth grades - this ratio is capped at 1) using the yearly school census data. Each panel shows (a) the estimated coefficients and standard errors on the treatment indicator from OLS regressions that control for the baseline outcome (i.e., school-level mean for years 2007-2008) and randomization strata fixed effects, (b) the control group means, and (c) the number of school-level observations. Regressions for individual years control for randomization strata fixed effects. Pooled regressions control for randomization strata by year fixed effects. Estimated standard errors are clustered at the primary school level. Estimates displayed in panels A, B and C are weighted by the number of students who took the examinations. Estimates in panel D are weighted by school (second - sixth grade) enrollment. ***p<0.01, **p<0.05, *p<0.1.

Table A.12: Effects for Schools over Time (Using Individual-Level Performance Data)

Year:	2009	2010	2011	2012	2013	2014	2015	2016	2009-2016
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Panel A: Second-grade mathematics performance									
Effect	-0.053	-0.105	0.022	0.043	-0.079	-0.196*	0.079	-0.093	-0.044
	(0.093)	(0.092)	(0.086)	(0.079)	(0.087)	(0.107)	(0.109)	(0.103)	(0.045)
Control mean	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Observations	3,314	3,221	3,161	3,308	2,872	2,427	2,368	2,190	22,861
Panel B: Second-grade reading performance									
Effect	-0.071	-0.123	0.015	-0.004	-0.050	-0.204*	0.029	-0.050	-0.056
	(0.088)	(0.076)	(0.083)	(0.075)	(0.086)	(0.115)	(0.101)	(0.108)	(0.045)
Control mean	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Observations	3,312	3,228	3,176	3,307	2,876	2,428	2,370	2,191	22,888
Panel C: Second-grade academic performance									
Effect	-0.067	-0.120	0.014	0.022	-0.070	-0.212*	0.058	-0.078	-0.054
	(0.092)	(0.087)	(0.088)	(0.080)	(0.089)	(0.115)	(0.109)	(0.109)	(0.047)
Control mean	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Observations	3,316	3,229	3,176	3,311	2,876	2,428	2,370	2,192	22,898
Panel D: Grade progression									
Effect	-0.009	-0.020*	-0.021**	-0.003	-0.007	0.000	-0.014*	-0.003	-0.010**
	(0.011)	(0.012)	(0.010)	(0.009)	(0.010)	(0.009)	(0.008)	(0.009)	(0.005)
Control mean	0.859	0.825	0.857	0.853	0.865	0.893	0.920	0.912	0.869
Observations	530	531	531	528	531	529	529	525	4,234

Notes: Panels A and B show estimated effects from individual-level regressions where individual-level performance was standardized with zero mean and unit variance for the control group. Panel C shows estimated effects from individual-level regressions where individual-level performance for both subjects was first standardized with zero mean and unit variance for the control group and then averaged and re-standardized (as detailed in the notes to Figure 2). Panel D shows estimated effects on grade progression (defined as the ratio of students promoted to the next grade with respect to those enrolled at the beginning of the school year in second to sixth grades - this ratio is capped at 1) using the yearly school census data. Each panel shows (a) the estimated coefficients and standard errors on the treatment indicator from OLS regressions that control for randomization strata fixed effects, (b) the control group means, and (c) the number of individual-level observations (Panels A-C) and the number of school-level observations (Panel D). Regressions for individual years control for randomization strata fixed effects. Pooled regressions control for randomization strata by year fixed effects. Estimated standard errors are clustered at the primary school level. Estimates in panel D are weighted by school (second - sixth grade) enrollment. ***p<0.01, **p<0.05, *p<0.1.

Table A.13: Effects for Schools over Time without Strata Fixed Effects

Year:	2009	2010	2011	2012	2013	2014	2015	2016	2009-2016
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Panel A: Second-grade mathematics performance									
Effect	-0.108	-0.119	0.002	-0.061	-0.127	-0.192*	-0.065	-0.213*	-0.104*
	(0.101)	(0.100)	(0.094)	(0.091)	(0.107)	(0.106)	(0.114)	(0.112)	(0.061)
Control mean	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Observations	360	335	329	380	335	299	254	220	2,512
Panel B: Second-grade reading performance									
Effect	-0.096	-0.110	0.030	-0.070	-0.113	-0.207*	-0.062	-0.177	-0.095
	(0.099)	(0.093)	(0.098)	(0.089)	(0.110)	(0.108)	(0.111)	(0.121)	(0.066)
Control mean	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Observations	360	335	330	380	335	299	254	220	2,513
Panel C: Second-grade academic performance									
Effect	-0.111	-0.124	0.011	-0.071	-0.129	-0.212*	-0.069	-0.210*	-0.108
	(0.104)	(0.099)	(0.100)	(0.093)	(0.113)	(0.110)	(0.117)	(0.120)	(0.067)
Control mean	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Observations	360	335	330	380	335	299	254	220	2,513
Panel D: Grade progression									
Effect	-0.012	-0.022*	-0.021**	-0.003	-0.010	-0.006	-0.019**	-0.007	-0.013**
	(0.011)	(0.012)	(0.011)	(0.011)	(0.011)	(0.010)	(0.009)	(0.010)	(0.006)
Control mean	0.859	0.825	0.857	0.853	0.865	0.893	0.920	0.912	0.869
Observations	530	531	531	528	531	529	529	525	4,234

Notes: Panels A and B show estimated effects from school-level regressions where individual-level performance was first standardized with zero mean and unit variance for the control group and then aggregated at the school level mean. Panel C shows estimated effects from school-level regressions where individual-level performance for both subjects was first standardized with zero mean and unit variance for the control group and then averaged, re-standardized, and aggregated at the school level mean (as detailed in the notes to Figure 2). Panel D shows estimated effects on grade progression (defined as the ratio of students promoted to the next grade with respect to those enrolled at the beginning of the school year in second to sixth grades - this ratio is capped at 1) using the yearly school census data. Each panel shows (a) the estimated coefficients and standard errors on the treatment indicator from OLS regressions that do not control for randomization strata fixed effects, (b) the control group means, and (c) the number of school-level observations. Pooled regressions control for year fixed effects. Estimated standard errors are clustered at the primary school level. Estimates displayed in panels A, B and C are weighted by the number of students who took the examinations. Estimates in panel D are weighted by school (second - sixth grade) enrollment. ***p<0.01, **p<0.05, *p<0.1.

Table A.14: Effects on Student Educational Trajectories without Strata Fixed Effects

	Control mean	Effect	Observations	Cohorts	*p*-values	*q*-values
	(1)	(2)	(3)	(4)	(5)	(6)
Panel A: Academic performance						
Second grade mathematics performance	0.000	-0.104*	22,861	2009-2016	0.087	0.263
		(0.061)				
Second grade reading performance	0.000	-0.095	22,888	2009-2016	0.154	0.277
		(0.066)				
Fourth grade mathematics performance	0.000	-0.094	3,207	2014, 2016	0.333	0.287
		(0.097)				
Fourth grade reading performance	0.000	-0.083	3,207	2014, 2016	0.393	0.287
		(0.098)				
Eighth grade mathematics performance	0.000	0.026	6,024	2009-2010, 2012-2013	0.670	0.388
		(0.060)				
Eighth grade reading performance	0.000	0.007	6,025	2009-2010, 2012-2013	0.925	0.492
		(0.070)				
Index of academic performance	0.000	-0.095	22,898	2009-2016	0.160	
		(0.067)				
Panel B: Educational attainment						
Primary completion on time	0.695	-0.031**	28,516	2009-2015	0.037	0.263
		(0.015)				
Primary completion with up to one year of delay	0.862	-0.027**	24,939	2009-2014	0.016	0.263
		(0.011)				
Primary completion overall	0.962	-0.011	20,953	2009-2013	0.111	0.263
		(0.007)				
Secondary completion on time	0.518	-0.036*	7,749	2009-2010	0.072	0.263
		(0.020)				
Secondary completion with up to one year of delay	0.655	-0.028	3,750	2009	0.228	0.287
		(0.023)				
Applied to university on time	0.167	-0.029**	3,750	2009	0.050	0.263
		(0.015)				
Enrolled to university on time	0.060	-0.013	3,750	2009	0.120	0.263
		(0.008)				
Completed years of education	8.205	-0.120**	28,516	2009-2015	0.040	
		(0.058)				

Notes: Column 1 displays control group means. Column 2 displays estimated coefficients and standard errors on the treatment indicator from OLS regressions that control for cohort fixed effects but do not control for randomization strata fixed effects. Column 3 displays the number of individual-level observations in each pooled regression. Column 4 displays the cohorts included in each pooled regression where cohorts are labeled with the year in which students were enrolled in second-grade. Column 5 shows *p*-values and column 6 shows the adjusted *q*-values (where outcomes from both panels are all considered in one group). Mathematics and reading performance have been standardized at the individual level with zero mean and unit variance for the control group. At the bottom of panel A, we include an index of academic performance that averages the performance across all grades for which students took the national examination as detailed in the notes to Table 2. At the bottom of panel B, we include the number of satisfactorily completed years of primary and secondary education by 2019. Estimated standard errors, reported in parentheses, are clustered at the primary school level. ***p<0.01, **p<0.05, *p<0.1.

Table A.15: Effects for Schools over Time - IV

Year:	2009	2010	2011	2012	2013	2014	2015	2016	2009-2016
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Panel A: Second-grade mathematics performance									
Effect	-0.059	-0.124	0.032	0.051	-0.127	-0.338*	0.154	-0.230	-0.068
	(0.111)	(0.118)	(0.131)	(0.131)	(0.151)	(0.200)	(0.231)	(0.281)	(0.072)
Control mean	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Observations	360	335	329	380	335	299	254	220	2,512
Panel B: Second-grade reading performance									
Effect	-0.078	-0.146	0.021	-0.020	-0.080	-0.352	0.057	-0.125	-0.084
	(0.105)	(0.098)	(0.126)	(0.124)	(0.150)	(0.215)	(0.213)	(0.292)	(0.071)
Control mean	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Observations	360	335	330	380	335	299	254	220	2,513
Panel C: Second-grade academic performance									
Effect	-0.074	-0.143	0.019	0.017	-0.112	-0.366*	0.113	-0.192	-0.082
	(0.110)	(0.111)	(0.134)	(0.133)	(0.155)	(0.216)	(0.231)	(0.296)	(0.075)
Control mean	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Observations	360	335	330	380	335	299	254	220	2,513
Panel D: Grade progression									
Effect	-0.010	-0.023*	-0.029**	-0.004	-0.012	0.001	-0.027*	-0.006	-0.015**
	(0.012)	(0.013)	(0.014)	(0.014)	(0.016)	(0.015)	(0.015)	(0.019)	(0.007)
Control mean	0.859	0.825	0.857	0.853	0.865	0.893	0.920	0.912	0.869
Observations	530	531	531	528	531	529	529	525	4,234

Notes: Panels A and B show estimated effects from school-level regressions where individual-level performance was first standardized with zero mean and unit variance for the control group and then aggregated at the school level mean. Panel C shows estimated effects from school-level regressions where individual-level performance for both subjects was first standardized with zero mean and unit variance for the control group and then averaged, re-standardized, and aggregated at the school level mean (as detailed in the notes to Figure 2). Panel D shows estimated effects on grade progression (defined as the ratio of students promoted to the next grade with respect to those enrolled at the beginning of the school year in second to sixth grades - this ratio is capped at 1) using the yearly school census data. Each panel shows (a) the estimated coefficients and standard errors on the ratio of XO laptops per student from IV regression models that instrument this ratio with the treatment indicator, (b) the control group means, and (c) the number of school-level observations. Regressions for individual years control for randomization strata fixed effects. Pooled regressions control for randomization strata by year fixed effects. Estimated standard errors are clustered at the primary school level. Estimates displayed in panels A, B and C are weighted by the number of students who took the examinations. Estimates in panel D are weighted by school (second - sixth grade) enrollment. ***p<0.01, **p<0.05, *p<0.1.

Table A.16: Effects on Student Educational Trajectories - IV

	Control mean	Effect	Observations	Cohorts	p-values	q-values
	(1)	(2)	(3)	(4)	(5)	(6)
Panel A: Academic performance						
Second grade mathematics	0.000	-0.069 (0.071)	22,861	2009-2016	0.327	0.427
Second grade reading	0.000	-0.087 (0.070)	22,888	2009-2016	0.214	0.427
Fourth grade mathematics	0.000	-0.221 (0.147)	3,207	2014, 2016	0.135	0.427
Fourth grade reading	0.000	-0.273* (0.150)	3,207	2014, 2016	0.070	0.427
Eighth grade mathematics	0.000	0.042 (0.074)	6,024	2009-2010, 2012-2013	0.569	0.490
Eighth grade reading	0.000	-0.017 (0.082)	6,025	2009-2010, 2012-2013	0.837	0.534
Index of academic performance	0.000	-0.074 (0.073)	22,898	2009-2016	0.313	
Panel B: Educational attainment						
Primary completion on time	0.695	-0.035* (0.018)	28,516	2009-2015	0.057	0.427
Primary completion with up to one year of delay	0.862	-0.029* (0.015)	24,939	2009-2014	0.053	0.427
Primary completion overall	0.954	-0.007 (0.008)	20,953	2009-2013	0.433	0.490
Secondary completion on time	0.518	-0.032 (0.023)	7,749	2009-2010	0.152	0.427
Secondary completion with up to one year of delay	0.655	-0.033 (0.030)	3,750	2009	0.269	0.427
Applied to university on time	0.167	-0.035* (0.021)	3,750	2009	0.092	0.427
Enrolled to university on time	0.060	-0.016 (0.012)	3,750	2009	0.177	0.427
Completed years of education	8.205	-0.104 (0.075)	28,516	2009-2015	0.164	

Notes: Column 1 displays control group means. Column 2 displays estimated coefficients and standard errors on the ratio of XO laptops per student from IV regression models that instrument this ratio with the treatment indicator. Regressions control for randomization strata by cohort fixed effects. For second and fourth grade performance, the average of XO per student of the first 2 and 4 years, respectively, was used. For the index of academic performance, we used the average XO per student of all grades up to the highest grade used in the index for that student. For all other estimates, the average of XO per student during the 6 years of primary school was used. Column 3 displays the number of individual-level observations in each pooled regression. Column 4 displays the cohorts included in each pooled regression where cohorts are labeled with the year in which students were enrolled in second-grade. Column 5 shows p-values. Column 6 shows the adjusted q-values (where all outcomes analyzed are considered as one group). Mathematics and reading performance have been standardized at the individual level with zero mean and unit variance for the control group. The bottom of panel A considers an index of academic performance that averages the performance of all national examinations taken by each student as detailed in the notes to Table 2. At the bottom of panel B, we include the number of satisfactorily completed years of primary and secondary education by 2019. Estimated standard errors, reported in parentheses, are clustered at the primary school level. ***p<0.01, **p<0.05, *p<0.1.

Appendix B: Attrition Analysis

Effects for schools over time: academic performance

Our investigation of effects on academic performance for schools over time relies on the second-grade national examination. This examination is applied to all schools with at least five students enrolled in second grade. Because of this, not every school in our sample was covered across all years. Therefore, it becomes imperative to show that school-level attrition across years is not driving our results.

In Table B.1 we show our main results of the effects for schools over time. Panels A-C show that out of the 531 schools in the sample, the year with the highest coverage was 2012 (with 380 schools covered) and the year with the lowest coverage was 2016 (with 220 schools covered). Accordingly, we test for whether the treatment was correlated with the likelihood of being included in the second-grade national examination in each year. Panel A of Table B.2 shows that the OLPC treatment was uncorrelated with this likelihood.

Conditional on being included in the examination, the average number of test takers per school varied between 8 and 10. At the intensive margin, Panel B of Table B.2 shows that the OLPC treatment did not affect the number of test takers.

To rule out potential compositional changes over time across the included schools, we perform baseline balance tests for some key characteristics reported in Table 1 considering only the set of schools covered in the examination within each year. Results in Table B.3 show stable baseline balance between the treated and control schools that were included in the examination each year. In addition to the stable balance, the baseline control group means of the included schools in each year are largely stable. This shows that not only balance was stable, but also the overall baseline composition of the sample of schools observed over time.

It is also worth noting that, up to year 2013, the coverage rate of our experimental schools oscillated around 60-70 percent. However, starting in 2014, coverage rates started to decrease significantly (Panel A of Table B.2). Given this, we test for whether the effects on academic performance are robust to the exclusion of years 2014 onward in which the coverage was significantly lower. Table B.4 shows that the effects on academic performance remain qualitatively unchanged after excluding either years 2014-2016 or 2015-2016.

The evidence presented suggests that attrition of schools with respect to the second grade national examinations is unlikely to be driving our estimates of the effects on academic performance for schools over time.

Effects for schools over time: grade progression

Panel D of Table B.1 displays our main results on grade progression. For this outcome, we rely on the annual school census that aims to cover the entire population of schools nationwide. Therefore, for this outcome we do not face attrition concerns. Indeed, the year with the lowest coverage was 2016 in which 525 out of the 531 focus schools were covered.

Effects on student educational trajectories: academic performance

To study individual-level academic performance over time, we rely on national examinations implemented in second, fourth and eight grades. Fourth-grade examinations were implemented in years 2016 and 2018. The Ministry of Education matched these examinations, at the individual level, with the second-grade examinations that corresponded to regular grade progression. That is, those who took the fourth-grade examination in year *t* were matched to the second-grade examination database of year *t-2*. Therefore, these correspond to cohorts that took the second-grade examination in years 2014 and 2016, respectively.

Eighth-grade examinations were implemented in years 2015, 2016, 2018, and 2019. The Ministry of Education matched these examinations, at the individual level, with the second-grade examinations that corresponded to regular grade progression. That is, those who took the eighth-grade examination in year *t* were matched to the second-grade examination database of year *t-6*. Therefore, these correspond to cohorts that took the second-grade examination in years 2009, 2010, 2012, and 2013, respectively.

Consequently, the estimated effects that we present on fourth and eight grade academic performance are conditional on regular school progression. Table B.5 shows the matching rates across examinations by second-grade cohorts. Overall, 69 percent of students who took the second-grade examination were matched to the fourth-grade examination. This matching rate closely mimics the proportion of students who completed primary school on time (equivalent to 69.5 percent as reported in Panel B of Table 2)

Table B.5 also shows that, overall, 48.4 percent of students who took the second-grade examination were matched to the eighth-grade examination. This matching rate closely mimics the proportion of students who completed secondary school on time (equivalent to 51.8 percent as reported in Panel B of Table 2). Therefore, the matching rates across examinations reflect the population-wide on-time school progression rates within the focus schools and are unlikely to be an artifact of the matching procedures applied by the Ministry of Education.

We then proceed to test if the treatment triggered differential attrition rates across examinations over time. Table B.5 shows that the intervention was orthogonal to the likelihood of attrition across national examinations.

Finally, we examine if the responsiveness to the treatment is likely similar between those who were matched across examinations and those who were not. Table B.6 shows estimated effects on second-grade academic performance separately for those who were matched with future examinations and those who were not. The estimates show that the effects on second-grade performance are equivalent between matched and unmatched individuals.

The evidence presented suggests that individual-level attrition across national examinations over time is unlikely to be driving our estimated effects on academic performance for students.

Effects on student educational trajectories: educational attainment

The estimated effects on educational attainment reported in Panel B of Table 2 rely on population-wide administrative data compiled in the SIAGIE system. As detailed in Section III.1 of the paper, we observe every student's attended school, grade, passing status, and, when applicable, the student's application and enrollment status in tertiary education institutions. As such, for this set of outcomes, we do not face attrition concerns. Nonetheless, given the time-frame of our evaluation, we are unable to observe the full spectrum of outcomes for all cohorts as many are still too young. For this reason, longer-term outcomes such as applications and enrollment to university are only observed for the 2009 cohort and, consequently, sample sizes are smaller.

Table B.1: Effects for Schools over Time

Year:	2009	2010	2011	2012	2013	2014	2015	2016	2009-2016
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Panel A: Second-grade mathematics performance									
Effect	-0.053	-0.105	0.022	0.043	-0.079	-0.196*	0.079	-0.093	-0.044
	(0.100)	(0.099)	(0.092)	(0.084)	(0.093)	(0.115)	(0.119)	(0.112)	(0.049)
Control mean	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Observations	360	335	329	380	335	299	254	220	2,512
Panel B: Second-grade reading performance									
Effect	-0.071	-0.123	0.015	-0.004	-0.050	-0.204	0.029	-0.050	-0.056
	(0.094)	(0.082)	(0.089)	(0.080)	(0.093)	(0.124)	(0.110)	(0.118)	(0.048)
Control mean	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Observations	360	335	330	380	335	299	254	220	2,513
Panel C: Second-grade academic performance									
Effect	-0.067	-0.120	0.014	0.022	-0.070	-0.212*	0.058	-0.078	-0.054
	(0.099)	(0.093)	(0.094)	(0.085)	(0.095)	(0.124)	(0.119)	(0.119)	(0.051)
Control mean	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Observations	360	335	330	380	335	299	254	220	2,513
Panel D: Grade progression									
Effect	-0.009	-0.020*	-0.021**	-0.003	-0.007	0.000	-0.014*	-0.003	-0.010**
	(0.011)	(0.012)	(0.010)	(0.009)	(0.010)	(0.009)	(0.008)	(0.009)	(0.005)
Control mean	0.859	0.825	0.857	0.853	0.865	0.893	0.920	0.912	0.869
Observations	530	531	531	528	531	529	529	525	4,234

Notes: Panels A and B show estimated effects from school-level regressions where individual-level performance was first standardized with zero mean and unit variance for the control group and then aggregated at the school level mean. Panel C shows estimated effects from school-level regressions where individual-level performance for both subjects was first standardized with zero mean and unit variance for the control group and then averaged, re-standardized, and aggregated at the school level mean (as detailed in the notes to Figure 2). Panel D shows estimated effects on grade progression (defined as the ratio of students promoted to the next grade with respect to those enrolled at the beginning of the school year in second to sixth grades - this ratio is capped at 1) using the yearly school census data. Each panel shows (a) the estimated coefficients and standard errors on the treatment indicator from OLS regressions that control for randomization strata fixed effects, (b) the control group means, and (c) the number of school-level observations. Regressions for individual years control for randomization strata fixed effects. Pooled regressions control for randomization strata by year fixed effects. Estimated standard errors are clustered at the primary school level. Estimates displayed in panels A, B and C are weighted by the number of students who took the examinations. Estimates in panel D are weighted by school (second - sixth grade) enrollment. ***p<0.01, **p<0.05, *p<0.1.

Table B.2: School-Level Coverage in the Second-Grade National Examination

Year:	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Panel A: School included in the second-grade national examination										
Adjusted difference	0.029	0.017	0.053	0.027	0.013	0.000	-0.045	0.016	0.032	0.008
	(0.031)	(0.035)	(0.038)	(0.040)	(0.042)	(0.038)	(0.038)	(0.040)	(0.041)	(0.036)
Control mean	0.677	0.711	0.613	0.587	0.604	0.706	0.647	0.545	0.455	0.387
Observations	531	531	531	531	531	531	531	531	531	531
Panel B: Number of test takers (conditional on being included in the second-grade national examination)										
Adjusted difference	-0.049	0.225	-0.535	-0.125	-0.484	-0.151	0.473	-0.152	-0.553	0.302
	(0.493)	(0.410)	(0.532)	(0.577)	(0.584)	(0.520)	(0.599)	(0.633)	(0.791)	(1.015)
Control mean	10.057	9.174	9.611	9.761	9.641	8.669	8.184	8.172	9.355	9.901
Observations	385	397	360	335	330	380	335	299	254	220

Notes: This table shows estimated effects on whether the school was covered in the second grade national examinations and on the number of test takers (among schools included in the examinations). Years (displayed in each column) indicate the year of the second grade national examination. Each panel presents (a) the estimated coefficients and standard errors on the treatment indicator from OLS regressions that control for randomization strata fixed effects, (b) the control group mean, and (c) the number of school-level observations. ***p<0.01, **p<0.05, *p<0.1.

Table B.3: Baseline Balance Among Schools Covered in the Second-Grade National Examination by Year

Year:	2009	2010	2011	2012	2013	2014	2015	2016
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Computers per student								
Adjusted difference	0.006*	0.007*	0.003	0.004	0.006*	0.001	0.006	0.000
	(0.003)	(0.003)	(0.003)	(0.003)	(0.004)	(0.004)	(0.004)	(0.005)
Control mean	0.013	0.012	0.014	0.013	0.012	0.013	0.012	0.013
Observations	360	335	330	380	335	299	254	220
Electricity								
Adjusted difference	0.042	0.028	0.030	0.033	0.027	0.015	0.006	0.000
	(0.032)	(0.035)	(0.033)	(0.032)	(0.034)	(0.036)	(0.038)	(0.043)
Control mean	0.816	0.801	0.827	0.816	0.822	0.820	0.827	0.819
Observations	360	335	330	380	335	299	254	220
Piped water								
Adjusted difference	0.001	0.007	0.003	0.003	0.025	-0.010	-0.051	-0.073
	(0.044)	(0.045)	(0.046)	(0.041)	(0.044)	(0.045)	(0.053)	(0.059)
Control mean	0.490	0.500	0.468	0.467	0.480	0.512	0.519	0.522
Observations	360	335	330	380	335	299	254	220
Enrollment (first - sixth grade)								
Adjusted difference	-0.558	1.772	2.282	1.990	1.840	1.834	1.295	0.676
	(2.491)	(2.586)	(2.589)	(2.305)	(2.561)	(2.840)	(3.311)	(3.978)
Control mean	68.705	70.188	70.461	68.726	71.908	74.766	78.603	81.582
Observations	360	335	330	380	335	299	254	220
Second-grade mathematics performance								
Adjusted difference	-0.032	-0.102	-0.069	-0.036	-0.034	0.011	-0.086	0.021
	(0.079)	(0.088)	(0.087)	(0.080)	(0.091)	(0.098)	(0.112)	(0.115)
Control mean	-0.049	0.059	0.057	0.045	0.023	0.003	0.059	-0.006
Observations	345	315	308	348	305	277	235	207
Second-grade reading performance								
Adjusted difference	-0.005	-0.040	-0.036	0.010	0.016	-0.025	-0.047	0.079
	(0.082)	(0.089)	(0.088)	(0.081)	(0.090)	(0.100)	(0.109)	(0.112)
Control mean	-0.028	0.054	0.050	0.041	0.045	0.016	0.059	-0.017
Observations	346	316	308	349	306	278	236	208
Grade progression (second - sixth grade)								
Adjusted difference	-0.021*	-0.009	-0.009	-0.010	-0.007	-0.009	-0.002	0.001
	(0.011)	(0.012)	(0.012)	(0.010)	(0.011)	(0.012)	(0.014)	(0.014)
Control mean	0.836	0.836	0.833	0.838	0.831	0.836	0.831	0.837
Observations	360	335	330	380	335	299	254	220

Notes: This table presents baseline statistics and estimated differences between treatment and control schools for the set of schools covered in the second grade national examinations every year. Each panel shows (a) the estimated coefficients and standard errors on the treatment indicator from OLS regressions that control for randomization strata fixed effects, (b) the control group means, and (c) the number of observations. Results for second-grade mathematics and reading performance are estimated with school-level regressions where individual-level performance on the 2007 and 2008 evaluations were first standardized with zero mean and unit variance for the control group for each year and then aggregated at the school-year level mean. Then the school-level average between 2007 and 2008 was computed. The other outcomes present school-level regressions using the average between the 2007 and 2008 school censuses for continuous variables and the maximum between the 2007 and 2008 school censuses for dichotomous variables. Estimates for second-grade mathematics and reading are weighted by the number of students who took the examination. Estimates for school grade progression are weighted by school (second - sixth grade) enrollment. ***p<0.01, **p<0.05, *p<0.1.

Table B.4: Effects on Academic Performance for Schools over Time - Alternative Pooling Periods

	Pooled school-year-level		
	2009-2013	2009-2014	2009-2016
	(1)	(2)	(3)
Panel A: Second-grade mathematics performance			
Effect	-0.033	-0.054	-0.044
	(0.051)	(0.051)	(0.049)
Control mean	0.000	0.000	0.000
Observations	1,739	2,038	2,512
Panel B: Second-grade reading performance			
Effect	-0.047	-0.066	-0.056
	(0.049)	(0.050)	(0.048)
Control mean	0.000	0.000	0.000
Observations	1,740	2,039	2,513
Panel C: Second-grade academic performance			
Effect	-0.044	-0.065	-0.054
	(0.052)	(0.053)	(0.051)
Control mean	0.000	0.000	0.000
Observations	1,740	2,039	2,513

Notes: Panels A and B show estimated effects from school-level regressions where individual-level performance was first standardized with zero mean and unit variance for the control group and then aggregated at the school level mean. Panel C shows estimated effects from school-level regressions where individual-level performance for both subjects was first standardized with zero mean and unit variance for the control group and then averaged, re-standardized, and aggregated at the school level mean (as detailed in the notes to Figure 2). Panel D shows estimated effects on grade progression (defined as the ratio of students promoted to the next grade with respect to those enrolled at the beginning of the school year in second to sixth grades - this ratio is capped at 1) using the yearly school census data. Each panel shows (a) the estimated coefficients and standard errors on the treatment indicator from OLS regressions that control for randomization strata by year fixed effects, (b) the control group means, and (c) the number of school-year observations. Estimated standard errors are clustered at the primary school level. Estimates displayed in panels A and B are weighted by the number of students who took the examinations. Estimates in panel C are weighted by school (second - sixth grade) enrollment. ***p<0.01, **p<0.05, *p<0.1.

Table B.5: Attrition Across National Examinations by Cohort

Cohort:	2009	2010	2012	2013	2014	2016	Pooled
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Matched with fourth-grade mathematics							
Adjusted difference					0.014	-0.022	-0.003
					(0.038)	(0.032)	(0.027)
Control mean					0.606	0.787	0.690
Observations					2,427	2,190	4,617
Matched with fourth-grade reading							
Adjusted difference					0.014	-0.020	-0.001
					(0.038)	(0.032)	(0.027)
Control mean					0.606	0.786	0.689
Observations					2,428	2,191	4,619
Matched with eighth-grade mathematics							
Adjusted difference	0.008	-0.038	-0.032	-0.011			-0.018
	(0.024)	(0.024)	(0.024)	(0.023)			(0.016)
Control mean	0.380	0.442	0.553	0.565			0.484
Observations	3,314	3,221	3,308	2,872			12,715
Matched with eighth-grade reading							
Adjusted difference	0.008	-0.039	-0.032	-0.013			-0.019
	(0.025)	(0.024)	(0.024)	(0.022)			(0.016)
Control mean	0.380	0.442	0.552	0.566			0.484
Observations	3,312	3,228	3,307	2,876			12,723

Notes: This table shows estimated effects on individual-level matching rates across national examinations by cohort. The national second-grade examination is taken as the base to compute the individual-level match indicator with fourth and eight-grade national exams. Cohorts (displayed in each column) indicate the year when students were enrolled in second-grade. Regressions for individual years control for randomization strata fixed effects. Pooled regressions control for randomization strata by year fixed effects. Estimated standard errors are clustered at the primary school level. ***p<0.01, **p<0.05, *p<0.1.

Table B.6: Effects on Second-Grade Academic Performance by Matching Status

	Matched with eight-grade examination					Matched with fourth-grade examination		
Cohort:	2009	2010	2012	2013	2009-2013	2014	2016	2014-2016
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Panel A: Second-grade mathematics performance								
Effect for matched	-0.071	-0.081	0.079	-0.081	-0.035	-0.243*	-0.038	-0.137
	(0.106)	(0.101)	(0.092)	(0.095)	(0.055)	(0.129)	(0.101)	(0.089)
	1,281	1,351	1,768	1,620	6,020	1,524	1,683	3,207
Effect for unmatched	-0.045	-0.104	0.029	-0.068	-0.048	-0.122	-0.230	-0.172*
	(0.098)	(0.103)	(0.085)	(0.092)	(0.053)	(0.113)	(0.142)	(0.091)
	2,033	1,870	1,540	1,252	6,695	903	507	1,410
p-value	[0.754]	[0.800]	[0.548]	[0.866]	[0.779]	[0.354]	[0.114]	[0.705]
Panel B: Second-grade reading performance								
Effect for matched	-0.100	-0.069	0.061	-0.001	-0.023	-0.208	-0.030	-0.117
	(0.101)	(0.088)	(0.083)	(0.090)	(0.052)	(0.136)	(0.105)	(0.092)
	1,280	1,353	1,767	1,623	6,023	1,525	1,682	3,207
Effect for unmatched	-0.055	-0.135	-0.052	-0.100	-0.085	-0.206*	-0.076	-0.169*
	(0.093)	(0.084)	(0.090)	(0.101)	(0.052)	(0.119)	(0.145)	(0.093)
	2,032	1,875	1,540	1,253	6,700	903	509	1,412
p-value	[0.593]	[0.452]	[0.194]	[0.246]	[0.179]	[0.991]	[0.694]	[0.552]

Notes: This table shows student-level effects on second-grade examination outcomes by their matching status with fourth and eight-grade examinations. Cohorts (displayed in each column) indicate the year when students were enrolled in second-grade for the cohorts that were also tested in fourth or eight-grade. Each panel shows (a) the estimated coefficients and standard errors on the treatment indicator differentiated by whether the student also took the fourth-grade or eight-grade examination from OLS regressions that control for randomization strata fixed effects (along with the number of student-level observations in each category), and (b) the *p*-value of the null for the equality of the estimated effects by matching status in brackets. Mathematics and reading exams have been standardized with zero mean and unit variance for the control group.. Regressions for individual years control for randomization strata fixed effects. Pooled regressions control for randomization strata by year fixed effects. Estimated standard errors are clustered at the primary school level. ***p<0.01, **p<0.05, *p<0.1.

Appendix C: Heterogeneity Analysis

Effects for schools over time

We explore the possibility of effect heterogeneity at the school level applying the machine learning-based approach (GATES analysis) proposed by Chernozhukov et al. (2023). We apply this framework to the school level academic performance and grade progression based on the 2009-2016 school averages. The covariates used for this heterogeneity analysis are based on the baseline characteristics from Table 1. For both outcomes, we use the 2007-2008 average of computers per student from Panel A, all variables from Panel B, and the second to sixth grade school enrollment. Additionally, for the academic performance we use the 2007-2008 average academic performance based on the variables from panel C, and for grade progression we use the second to sixth grade progression from panel D. [24]

The results are shown in Figure C.1 and Figure C.2. Overall, our findings indicate no significant heterogeneity regarding effects for schools over time.

Effects on student educational trajectories

For the effects on individual-level educational trajectories, we explore some few sources of heterogeneity based on the limited availability of predetermined characteristics at this level. Table C.1 evaluates heterogeneity by gender. Overall, we do not find evidence of heterogeneous effects by gender.

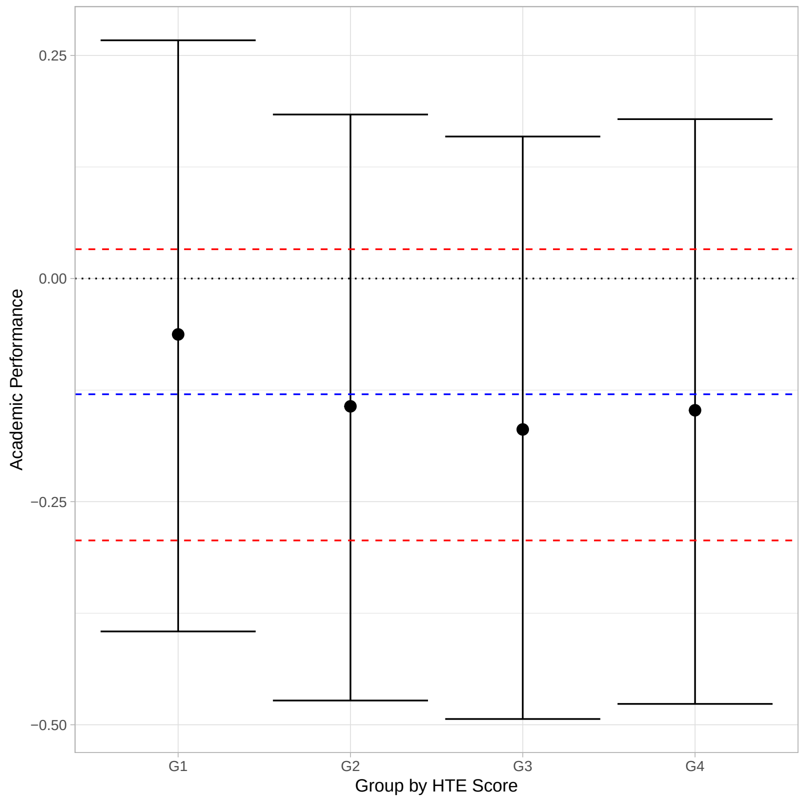
We then take advantage of a subset of cohorts for which the national examinations captured information on the caregiver's educational attainment. Panel A of Table C.2 reports this analysis which documents differential effects on academic performance for students whose caregivers had educational attainment below vs above completed primary school. Overall, we find no differential effects on academic performance. We also exploit the fact that the SIAGIE administrative data captured caregiver's educational attainment for all evaluated cohorts to explore heterogeneity on educational attainment. Panel B of Table C.2 documents no heterogeneous effects on this front.

While we do not possess measures of individual-level baseline academic performance (i.e., before exposure to the program) for the evaluated cohorts, we perform an analysis of heterogeneous effects by baseline school-level academic performance. For this, we use the average school-level performance in the second-grade national examinations of years 2007 and 2008. Table C.3 reports the findings suggesting no overall heterogeneity on this front.

[24] We exclude internet from panel A as a covariate in order for the algorithm to run properly. However, given the low access to internet, there was likely not much heterogeneity to be exploited through that covariate

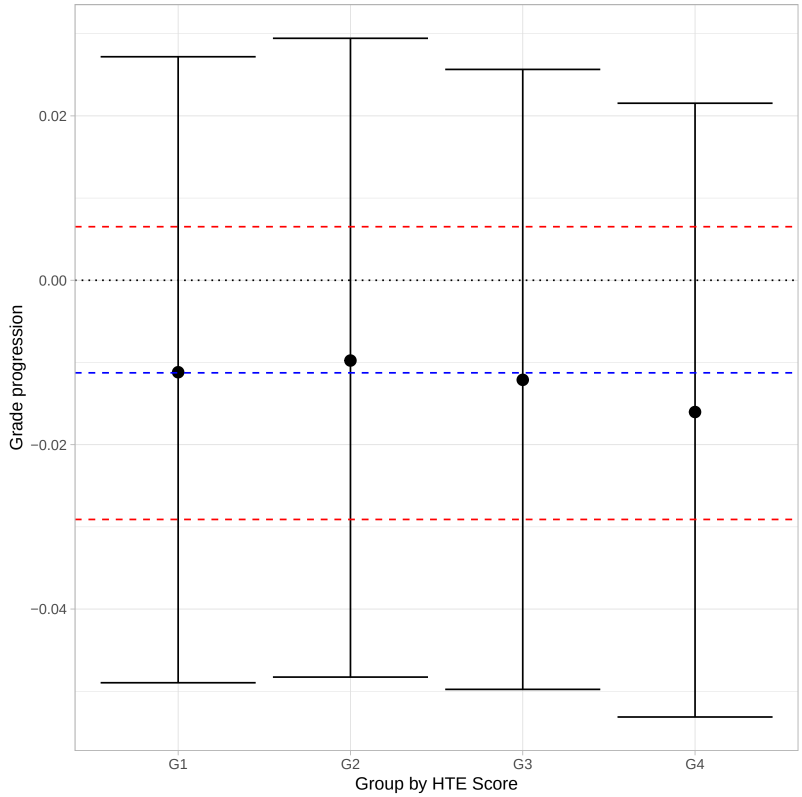
Finally, we exploit the data from our 2013 survey to explore potential effect heterogeneity by socio-economic status. To do so, we use data from the student questionnaire to build a socio-economic index defined as the equally weighted average of the presence of household assets and services (TV, radio, gas or electric stove, electric iron, cellphone, wheelbarrow, electricity, piped water, sewer, fixed line phone, internet, non-XO computer or laptop, video games). Table C.4 presents the findings from this analysis suggesting not discernible heterogeneous effects.

Figure C.1: Effects for Schools over Time on Academic Performance by Machine Learning Heterogeneity



Notes: Estimates correspond to a GATES analysis based on Chernozhukov et al. (2023) for school level academic performance based on the 2009-2016 average. The covariates used for this heterogeneity analysis are based on the baseline characteristics from Table 1. We use the 2007-2008 average of computers per student from Panel A, all variables from Panel B, the 2007-2008 average academic performance based on the variables from panel C, and the second to sixth grade school enrollment. Point estimates and 95% adjusted confidence intervals uniform across groups based on 1000 random splits in half

Figure C.2: Effects for Schools over Time on Grade Progression by Machine Learning Heterogeneity



Notes: Estimates correspond to a GATES analysis based on Chernozhukov et al. (2023) for school level grade progression based on the 2009-2016 average. The covariates used for this heterogeneity analysis are based on the baseline characteristics from Table 1. We use the 2007-2008 average of computers per student from Panel A, all variables from Panel B, the second to sixth grade progression from panel D, and the second to sixth grade school enrollment. Point estimates and 95% adjusted confidence intervals uniform across groups based on 1000 random splits in half

Table C.1: Effects on Student Educational Trajectories by Gender

	Control mean	Males	Females	p-value (2) = (3)	N	Cohorts
	(1)	(2)	(3)	(4)	(5)	(6)
Panel A: Academic performance						
Second grade mathematics	0.000	-0.041	-0.047	0.825	22,861	2009-2016
		(0.048)	(0.047)			
Second grade reading	0.000	-0.051	-0.061	0.740	22,888	2009-2016
		(0.083)	(0.048)			
Fourth grade mathematics	0.000	-0.069	-0.141*	0.338	3,207	2014, 2016
		(0.082)	(0.083)			
Fourth grade reading	0.000	-0.132	-0.134	0.984	3,207	2014, 2016
		(0.050)	(0.082)			
Eighth grade mathematics	0.000	0.059	-0.004	0.194	6,024	2009-2010, 2012-2013
		(0.057)	(0.050)			
Eighth grade reading	0.000	0.042	-0.064	0.044	6,025	2009-2010, 2012-2013
		(0.047)	(0.057)			
Index of academic performance	0.000	-0.034	-0.058	0.362	22,898	2009-2016
		(0.047)	(0.047)			
Panel B: Educational attainment						
Primary completion on time	0.695	-0.023*	-0.018	0.660	28,516	2009-2015
		(0.011)	(0.013)			
Primary completion with up to one year of delay	0.862	-0.023**	-0.012	0.275	24,939	2009-2014
		(0.006)	(0.011)			
Primary completion overall	0.954	-0.004	-0.004	1.000	20,953	2009-2013
		(0.020)	(0.006)			
Secondary completion on time	0.518	-0.016	-0.029	0.593	7,749	2009-2010
		(0.026)	(0.020)			
Secondary completion with up to one year of delay	0.655	-0.015	-0.027	0.731	3,750	2009
		(0.018)	(0.026)			
Applied to university on time	0.167	-0.004	-0.044**	0.088	3,750	2009
		(0.012)	(0.018)			
Enrolled to university on time	0.060	-0.007	-0.015	0.593	3,750	2009
		(0.010)	(0.012)			
Completed years of education	8.205	-0.062	-0.060	0.968	28,516	2009-2015
		(0.049)	(0.052)			

Notes: Column 1 displays control group means. Column 2 displays estimated coefficients and standard errors on the treatment indicator for males from OLS regressions that control for randomization strata by cohort fixed effects. Column 3 displays estimated coefficients and standard errors on the treatment indicator for females from OLS regressions that control for randomization strata by cohort fixed effects. Column 4 displays the p-values for the null of equality of effects between males and females. Column 5 displays the number of individual-level observations in each pooled regression. Column 6 displays the cohorts included in each pooled regression where cohorts are labeled with the year in which students were enrolled in second grade. At the bottom of panel A, we include an index of academic performance that averages the performance across all grades for which students took the national examination as detailed in the notes to Table 2. At the bottom of panel B, we include the number of satisfactorily completed years of primary and secondary education by 2019. Estimated standard errors, reported in parentheses, are clustered at the primary school level. ***p<0.01, **p<0.05, *p<0.1.

Table C.2: Effects on Student Educational Trajectories by Caregiver's Educational Attainment

	Control mean	Incomplete Primary or less	Complete Primary or more	p-value (2) = (3)	N	Cohorts
	(1)	(2)	(3)	(4)	(5)	(6)
Panel A: Academic performance						
Second grade mathematics	0.000	-0.067	-0.018	0.305	12,100	2012-2016
		(0.066)	(0.065)			
Second grade reading	0.000	-0.065	-0.021	0.347	12,101	2012-2016
		(0.065)	(0.131)			
Fourth grade mathematics	0.000	-0.348***	-0.142	0.050	1,654	2014
		(0.131)	(0.116)			
Fourth grade reading	0.000	-0.374***	-0.159	0.031	1,655	2014
		(0.116)	(0.067)			
Eighth grade mathematics	0.000	0.100	-0.051	0.025	4,159	2009-2010, 2013
		(0.067)	(0.065)			
Eighth grade reading	0.000	0.047	-0.085	0.052	4,161	2009-2010, 2013
		(0.065)	(0.061)			
Index of academic performance	0.000	-0.050	-0.032	0.668	14,168	2012-2016
		(0.061)	(0.054)			
Panel B: Educational attainment						
Primary completion on time	0.705	-0.036**	-0.014	0.104	27,993	2009-2015
		(0.015)	(0.012)			
Primary completion with up to one year of delay	0.876	-0.032***	-0.013	0.119	24,426	2009-2014
		(0.012)	(0.006)			
Primary completion overall	0.972	-0.010	-0.007	0.641	20,481	2009-2013
		(0.006)	(0.021)			
Secondary completion on time	0.536	-0.022	-0.029*	0.742	7,519	2009-2010
		(0.021)	(0.027)			
Secondary completion with up to one year of delay	0.680	-0.035	-0.016	0.546	3,618	2009
		(0.027)	(0.016)			
Applied to university on time	0.172	-0.025	-0.016	0.701	3,618	2009
		(0.016)	(0.009)			
Enrolled to university on time	0.060	0.000	-0.013	0.350	3,618	2009
		(0.009)	(0.011)			
Completed years of education	8.306	-0.114**	-0.064*	0.274	27,993	2009-2015
		(0.050)	(0.037)			

Notes: Column 1 displays control group means. Column 2 displays estimated coefficients and standard errors on the treatment indicator for student's with caregivers who had not completed primary education from OLS regressions that control for randomization strata by cohort fixed effects. Column 3 displays estimated coefficients and standard errors on the treatment indicator for student's with caregivers who have completed primary education from OLS regressions that control for randomization strata by cohort fixed effects. Column 4 displays the p-values for the null of equality of effects between columns (2) and (3). Column 5 displays the number of individual-level observations in each pooled regression. Column 6 displays the cohorts included in each pooled regression where cohorts are labeled with the year in which students were enrolled in second grade. At the bottom of panel A, we include an index of academic performance that averages the performance across all grades for which students took the national examination as detailed in the notes to Table 2. At the bottom of panel B, we include the number of satisfactorily completed years of primary and secondary education by 2019. As information on caregiver's educational attainment was not available for the 2009-2011 second-grade national examinations, effects on second-grade academic performance reported in Panel A are restricted for cohorts 2012-2016. In addition, caregiver's educational attainment was not captured in year 2018. This corresponds to the year in which the 2016 cohort wrote the fourth-grade exam and in which the 2012 cohort wrote the eight-grade exam. Therefore, these cohorts are not included in the analysis for these outcomes. Estimated standard errors, reported in parentheses, are clustered at the primary school level. ***p<0.01, **p<0.05, *p<0.1.

Table C.3: Effects on Student Educational Trajectories by School-Level Baseline Academic Performance

	Control mean	Above median	Below median	p-value (2) = (3)	N	Cohorts
	(1)	(2)	(3)	(4)	(5)	(6)
Panel A: Academic performance						
Second grade mathematics	0.000	-0.077	-0.034	0.667	21,355	2009-2016
		(0.060)	(0.060)			
Second grade reading	0.000	-0.079	-0.042	0.707	21,381	2009-2016
		(0.094)	(0.060)			
Fourth grade mathematics	0.000	-0.367***	0.051	0.003	2,972	2014, 2016
		(0.090)	(0.094)			
Fourth grade reading	0.000	-0.388***	0.021	0.004	2,972	2014, 2016
		(0.070)	(0.090)			
Eighth grade mathematics	0.000	0.061	-0.002	0.523	5,609	2009-2010, 2012-2013
		(0.072)	(0.070)			
Eighth grade reading	0.000	-0.035	-0.023	0.910	5,611	2009-2010, 2012-2013
		(0.060)	(0.072)			
Index of academic performance	0.000	-0.087	-0.023	0.513	21,391	2009-2016
		(0.070)	(0.060)			
Panel B: Educational attainment						
Primary completion on time	0.690	-0.001	-0.028*	0.215	24,621	2009-2015
		(0.014)	(0.015)			
Primary completion with up to one year of delay	0.859	-0.011	-0.021	0.597	21,459	2009-2014
		(0.009)	(0.014)			
Primary completion overall	0.951	-0.007	-0.002	0.652	18,005	2009-2013
		(0.023)	(0.009)			
Secondary completion on time	0.517	-0.020	-0.019	0.959	6,639	2009-2010
		(0.031)	(0.023)			
Secondary completion with up to one year of delay	0.657	-0.029	0.009	0.383	3,212	2009
		(0.020)	(0.031)			
Applied to university on time	0.162	-0.031	-0.004	0.364	3,212	2009
		(0.013)	(0.020)			
Enrolled to university on time	0.059	-0.009	-0.013	0.867	3,212	2009
		(0.013)	(0.013)			
Completed years of education	8.175	-0.047	-0.047	1.000	24,621	2009-2015
		(0.060)	(0.068)			

Notes: Column 1 displays control group means. Column 2 displays estimated coefficients and standard errors on the treatment indicator for individuals who studied in schools that were above the median of the average second-grade national academic achievement for 2007 and 2008 from OLS regressions that control for randomization strata by cohort fixed effects. Column 3 displays estimated coefficients and standard errors on the treatment indicator for individuals who studied in schools that were below the median of the average second-grade national academic achievement for 2007 and 2008 from OLS regressions that control for randomization strata by cohort fixed effects. Column 4 displays the p-values for the null of equality of effects between those above and below the median baseline level of academic achievement. Column 5 displays the number of individual-level observations in each pooled regression. Column 6 displays the cohorts included in each pooled regression where cohorts are labeled with the year in which students were enrolled in second grade. At the bottom of panel A, we include an index of academic performance that averages the performance across all grades for which students took the national examination as detailed in the notes to Table 2. At the bottom of panel B, we include the number of satisfactorily completed years of primary and secondary education by 2019. Estimated standard errors, reported in parentheses, are clustered at the primary school level. ***p<0.01, **p<0.05, *p<0.1.

Table C.4: Effects on Students by Socio-Economic Status

	Control mean	Below median SES	Above median SES	*p*-value (2) = (3)	N
	(1)	(2)	(3)	(4)	(5)
Panel A: Technology Access					
Student has own XO laptop in school	0.291	0.492***	0.419***	0.157	2,129
		(0.057)	(0.050)		
Student takes the XO laptop home	0.019	0.185***	0.198***	0.689	2,142
		(0.040)	(0.039)		
Student has non-XO laptop or computer at home	0.100	0.010	0.015	0.851	2,137
		(0.013)	(0.023)		
Student has internet at home	0.026	-0.003	-0.004	0.929	2,127
		(0.004)	(0.010)		
Panel B: Students' use of computers in the school (previous week)					
Used for entertainment	0.518	0.234***	0.079	0.012	2,128
		(0.073)	(0.065)		
Used for academic purposes	0.566	0.160*	0.063	0.140	2,125
		(0.082)	(0.065)		
Panel C: Students' digital skills					
XO test	0.000	0.454***	0.371***	0.464	2,103
		(0.121)	(0.094)		
PC test	0.000	0.300**	0.083	0.022	2,103
		(0.115)	(0.090)		
Internet test	0.000	0.162	0.026	0.123	2,103
		(0.106)	(0.094)		
Panel D: Students' cognitive skills					
Cognitive skills index	0.000	0.142	0.120	0.852	2,107
		(0.110)	(0.107)		
Raven's progressive matrices	0.000	0.005	0.060	0.595	2,101
		(0.099)	(0.091)		
Verbal Fluency	0.000	0.241*	0.158	0.540	2,106
		(0.129)	(0.117)		
Coding	0.000	0.036	0.025	0.904	2,085
		(0.107)	(0.091)		
Panel E: Students' academic achievement					
Mathematics	0.000	0.107	0.009	0.399	2,092
		(0.126)	(0.096)		
Reading	0.000	0.013	0.029	0.887	2,125
		(0.105)	(0.094)		

Notes: Column 1 displays control group means. Column 2 displays estimated coefficients and standard errors on the treatment indicator for student with below median socio-economic status (SES) from OLS regressions that control for randomization strata fixed effects. Column 3 displays estimated coefficients and standard errors on the treatment indicator for student with above median SES from OLS regressions that control for randomization strata by cohort fixed effects. Column 4 displays the *p*-values for the null of equality of effects between columns (2) and (3). Column 5 displays the number of observations in each regression. Socio-economic status was calculated with an equally weighted average index of household assets and services (TV, radio, gas or electric stove, electric iron, cellphone, wheelbarrow, electricity, piped water, sewer, fixed line phone, internet, non-XO computer or laptop, video games). In this index, we excluded assets associated with agricultural work (i.e., wood stove, plow, lamp, rake, or axe) as they might be correlated negatively with SES. However, results are consistent when including them in the SES index. Data corresponds to the survey implemented by the team in the year 2013. Estimated standard errors, reported in parentheses, are clustered at the primary school level. ***p<0.01, **p<0.05, *p<0.1.