Appendix for Can Technology Facilitate Scale? Evidence from a Randomized Evaluation of High Dosage Tutoring

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Table A1: End of Year Program Effects with Baseline Covariates, Cohort 2 (AY2019-2020)

	N	Control Mean	ITT	Control Complier Mean	TOT
Math GPA	1609	2.006	0.125***	1.915	0.166***
			(0.047)		(0.062)
Proportion of Math Courses Failed	1609	0.148	-0.036**	0.167	-0.047***
			(0.014)		(0.018)
Overall GPA	1624	2.139	0.073*	2.074	0.097*
			(0.038)		(0.049)
Proportion of Overall Courses Failed	1624	0.121	-0.016*	0.126	-0.021*
			(0.009)		(0.012)
Non-Math GPA	1624	2.166	0.060	2.106	0.080
			(0.039)		(0.052)
Proportion of Non-Math Courses Failed	1624	0.119	-0.012	0.121	-0.016
			(0.010)		(0.013)
Number of Days Absent	1692	11.679	0.262	11.284	0.358
			(0.565)		(0.760)
Number of Days Suspended (Out of School)	1841	0.133	0.048	0.169	0.070
			(0.045)		(0.064)

Notes. Program effects estimated on sample of students who were randomized into Saga Technology in AY2019-2020, using the following baseline covariates: randomization block, age, race/ethnicity, English language learner status, diverse learner status, socioeconomic status, math GPA, non-math GPA, proportion of courses failed, proportion of math courses failed, proportion of non-math courses failed, standardized math and reading test scores, number of days absent from school, number of in-school disciplinary incidents, number of days of out-of-school suspensions, and a set of indicator variables for missing baseline data. GPA is on a 0.00-4.00 point scale using only core classes (Math, Science, Social Studies and English). To construct standardized test scores, we gather individual test scores for the reading and math sections from the Spring test date each year and generate a z-score using the control mean and standard deviation of the scores. Number of days absent include excused and unexcused absences. We measure out-of-school suspensions as the total number of days a student is suspended during the school year. Missing baseline data has been imputed using mean values of the control group. *** p<0.01, ** p<0.05, * p <0.1

Table A2: End of Year Program Effects, Alternate Models, Cohort 1 (AY2018-2019)

	Model 2		Model 3		Model 4	
	ITT	TOT	ITT	TOT	ITT	TOT
Standardized Math Score	0.227***	0.277***	0.192***	0.234***	0.226***	0.278***
	(0.048)	(0.058)	(0.035)	(0.042)	(0.051)	(0.062)
Math GPA	0.220***	0.267***	0.192***	0.231***	0.220***	0.266***
	(0.060)	(0.073)	(0.048)	(0.056)	(0.065)	(0.078)
Proportion of Math Courses Failed	-0.041**	-0.050***	-0.040***	-0.048***	-0.045***	-0.055***
	(0.016)	(0.019)	(0.014)	(0.017)	(0.017)	(0.020)
Overall GPA	0.079	0.096	0.038	0.045	0.067	0.081
	(0.052)	(0.063)	(0.039)	(0.046)	(0.056)	(0.067)
Proportion of Overall Courses Failed	-0.008	-0.010	-0.003	-0.004	-0.007	-0.009
	(0.013)	(0.016)	(0.011)	(0.014)	(0.014)	(0.017)
Standardized Reading Score	-0.042	-0.059	-0.048	-0.069	-0.028	-0.039
	(0.076)	(0.108)	(0.057)	(0.080)	(0.079)	(0.112)
Non-Math GPA	0.036	0.044	-0.010	-0.012	0.020	0.024
	(0.052)	(0.063)	(0.040)	(0.047)	(0.056)	(0.067)
Proportion of Non-Math Courses Failed	0.001	0.002	0.007	0.009	0.004	0.004
	(0.013)	(0.016)	(0.012)	(0.014)	(0.014)	(0.017)
Number of Days Absent	0.225	0.279	-0.409	-0.501	0.081	0.100
	(1.111)	(1.363)	(0.944)	(1.139)	(1.144)	(1.395)
Number of Days Suspended (Out of School)	0.023	0.029	-0.057	-0.073	0.001	0.001
	(0.067)	(0.085)	(0.082)	(0.103)	(0.075)	(0.094)
Baseline Covariates	No	No	Yes	Yes	No	No
Students with Missing Baseline Data	Yes	Yes	No	No	No	No

Notes. Program effects estimated using 3 alternate models. In Model 2, we estimate treatment effects on sample of students who were randomized into Saga Tech in AY2018-2019, by controlling for randomization blocks and no baseline covariates. In Model 3, program effects are estimated by controlling for the following baseline covariates: age, race/ethnicity, English language learner status, diverse learner status, socioeconomic status, math GPA, non-math GPA, proportion of courses failed, proportion of math courses failed, proportion of non-math courses failed, standardized math and reading test scores, number of days absent from school, number of in-school disciplinary incidents, number of days of out-of-school suspensions, and randomization blocks. These treatment effects are estimated on the sample of students with available baseline data. In Model 4, program effects are estimated by controlling for randomization blocks, on sample of students who were randomized into Saga Technology in AY2018-2019, excluding students with missing baseline data. GPA is on a 0.00-4.00 point scale using only core classes (Math, Science, Social Studies, and English). To construct standardized test scores, we gather individual test scores for the reading and math sections from the Spring test date each year and generate a z-score using the control mean and standard deviation of the scores. Note that we only have outcome standardized reading test scores for the Chicago sample. Number of days absent include excused and unexcused absences. We measure out-of-school suspensions as the total number of days a student is suspended during the school year. *** p<0.01, ** p<0.05, * p <0.1

Table A3: Middle of Year Program Effects Estimated using Alternate Models, for Cohort 1 (AY2018-2019)

	Model 2		Model 3		Model 4	
	ITT	TOT	ITT	TOT	ITT	TOT
Math GPA	0.199***	0.242***	0.164***	0.198***	0.191***	0.232***
	(0.062)	(0.075)	(0.051)	(0.060)	(0.067)	(0.080)
Proportion of Math Courses Failed	-0.040**	-0.049**	-0.039**	-0.047**	-0.043**	-0.052**
	(0.017)	(0.020)	(0.016)	(0.019)	(0.017)	(0.021)
Overall GPA	0.098*	0.119*	0.053	0.064	0.078	0.094
	(0.052)	(0.063)	(0.039)	(0.046)	(0.056)	(0.067)
Proportion of Overall Courses Failed	-0.015	-0.018	-0.008	-0.009	-0.011	-0.013
	(0.013)	(0.015)	(0.011)	(0.013)	(0.013)	(0.016)
Non-Math GPA	0.066	0.080	0.017	0.020	0.042	0.051
	(0.053)	(0.064)	(0.041)	(0.048)	(0.057)	(0.068)
Proportion of Non-Math Courses Failed	-0.007	-0.008	0.002	0.002	0.000	-0.001
	(0.013)	(0.016)	(0.012)	(0.014)	(0.014)	(0.017)
Number of Days Absent	-0.690	-0.985	-0.546	-0.777	-0.937	-1.340
	(0.691)	(0.981)	(0.508)	(0.709)	(0.648)	(0.922)
Baseline Covariates	No	No	Yes	Yes	No	No
Students with Missing Baseline Data	Yes	Yes	No	No	No	No

Notes. Program effects estimated using 3 alternate models. In Model 2, we estimate treatment effects on sample of students who were randomized into Saga Technology in AY2018-2019, by controlling for randomization blocks and no baseline covariates. In Model 3, program effects are estimated by controlling for the following baseline covariates: age, race/ethnicity, English language learner status, diverse learner status, socioeconomic status, math GPA, non-math GPA, proportion of courses failed, proportion of math courses failed, proportion of non-math courses failed, standardized math and reading test scores, number of days absent from school, number of in-school disciplinary incidents, number of days of out-of-school suspensions, and randomization blocks. These treatment effects are estimated on the sample of students with available baseline data. In Model 4, program effects are estimated by controlling for randomization blocks, on sample of students who were randomized into Saga Technology in AY2018-2019, excluding students with missing baseline data. GPA is on a 0.00-4.00 point scale using only core classes (Math, Science, Social Studies, and English). To construct standardized test scores, we gather individual test scores for the reading and math sections from the Spring test date each year and generate a z-score using the control mean and standard deviation of the scores. Number of days absent include excused and unexcused absences. We measure out-of-school suspensions as the total number of days a student is suspended during the school year. *** p<0.01, ** p<0.05, * p <0.1

Table A4: Middle of Year Program Effects, Alternate Models, for Cohort 2 (AY2019-2020)

	Model 2		Model 3		Model 4	
	ITT	TOT	ITT	TOT	ITT	TOT
Math GPA	0.141**	0.186**	0.134**	0.179**	0.134*	0.179*
	(0.065)	(0.085)	(0.056)	(0.074)	(0.071)	(0.093)
Proportion of Math Courses Failed	-0.048**	-0.064***	-0.050***	-0.066***	-0.048**	-0.064**
	(0.019)	(0.025)	(0.019)	(0.025)	(0.020)	(0.027)
Overall GPA	0.077	0.102	0.086*	0.115**	0.081	0.108
	(0.054)	(0.070)	(0.044)	(0.058)	(0.059)	(0.077)
Proportion of Overall Courses Failed	-0.023	-0.030*	-0.022*	-0.029*	-0.020	-0.027
	(0.014)	(0.018)	(0.013)	(0.017)	(0.015)	(0.020)
Non-Math GPA	0.061	0.081	0.077*	0.102*	0.070	0.094
	(0.054)	(0.071)	(0.046)	(0.060)	(0.059)	(0.078)
Proportion of Non-Math Courses Failed	-0.015	-0.019	-0.014	-0.018	-0.012	-0.016
	(0.014)	(0.019)	(0.013)	(0.018)	(0.016)	(0.021)
Number of Days Absent	-0.626	-0.921	-0.306	-0.451	-0.819	-1.201
	(0.672)	(0.981)	(0.572)	(0.825)	(0.716)	(1.042)
Baseline Covariates	No	No	Yes	Yes	No	No
Students with Missing Baseline Data	Yes	Yes	No	No	No	No

Notes. Program effects estimated using 3 alternate models. In Model 2, we estimate treatment effects on sample of students who were randomized into Saga Technology in AY2019-2020, by controlling for randomization blocks and no baseline covariates. In Model 3, program effects are estimated by controlling for the following baseline covariates: age, race/ethnicity, English language learner status, diverse learner status, socioeconomic status, math GPA, non-math GPA, proportion of courses failed, proportion of math courses failed, proportion of non-math courses failed, standardized math and reading test scores, number of days absent from school, number of in-school disciplinary incidents, number of days of out-of-school suspensions, and randomization blocks. These treatment effects are estimated on the sample of students with available baseline data. In Model 4, program effects are estimated by controlling for randomization blocks, on sample of students who were randomized into Saga Technology in AY2019-2020, excluding students with missing baseline data. GPA is on a 0.00-4.00 point scale using only core classes (Math, Science, Social Studies, and English). To construct standardized test scores, we gather individual test scores for the reading and math sections from the Spring test date each year and generate a z-score using the control mean and standard deviation of the scores. Number of days absent include excused and unexcused absences. We measure out-of-school suspensions as the total number of days a student is suspended during the school year. *** p<0.01, ** p<0.05, * p <0.1

Table A5: Program Effects on Middle of Year Outcomes in Year Following Treatment, Alternate Models, Cohort 1 (AY2018-2019)

	Model 2		Model 3		Model 4	
	ITT	TOT	ITT	TOT	ITT	TOT
Math GPA	0.137**	0.166**	0.126**	0.152**	0.150**	0.182**
	(0.065)	(0.078)	(0.058)	(0.069)	(0.069)	(0.083)
Proportion of Math Courses Failed	-0.048**	-0.058**	-0.053**	-0.064***	-0.057**	-0.069**
	(0.021)	(0.026)	(0.021)	(0.025)	(0.023)	(0.027)
Overall GPA	0.074	0.090	0.047	0.057	0.073	0.088
	(0.054)	(0.065)	(0.046)	(0.055)	(0.058)	(0.070)
Proportion of Overall Courses Failed	-0.016	-0.019	-0.013	-0.016	-0.015	-0.019
	(0.016)	(0.019)	(0.014)	(0.017)	(0.016)	(0.020)
Non-Math GPA	0.053	0.065	0.020	0.025	0.046	0.056
	(0.056)	(0.067)	(0.048)	(0.057)	(0.059)	(0.071)
Proportion of Non-Math Courses Failed	-0.007	-0.008	-0.002	-0.002	-0.003	-0.004
	(0.016)	(0.019)	(0.015)	(0.017)	(0.017)	(0.020)
Baseline Covariates	No	No	Yes	Yes	No	No
Students with Missing Baseline Data	Yes	Yes	No	No	No	No

Notes. Program effects estimated using 3 alternate models on Middle of Year Outcomes in year following treatment during AY2019-2020. In Model 2, we estimate treatment effects on sample of students who were randomized into Saga Technology in AY2018-2019, by controlling for randomization blocks and no baseline covariates. In Model 3, program effects are estimated by controlling for the following baseline covariates: age, race/ethnicity, English language learner status, diverse learner status, socioeconomic status, math GPA, non-math GPA, proportion of courses failed, proportion of math courses failed, proportion of non-math courses failed, standardized math and reading test scores, number of days absent from school, number of in-school disciplinary incidents, number of days of out-of-school suspensions, and randomization blocks. These treatment effects are estimated on the sample of students with available baseline data. In Model 4, program effects are estimated by controlling for randomization blocks, on sample of students who were randomized into Saga Technology in AY2018-2019, excluding students with missing baseline data. GPA is on a 0.00-4.00 point scale using only core classes (Math, Science, Social Studies, and English). To construct standardized test scores, we gather individual test scores for the reading and math sections from the Spring test date each year and generate a z-score using the control mean and standard deviation of the scores. Number of days absent include excused and unexcused absences. We measure out-of-school suspensions as the total number of days a student is suspended during the school year. *** p<0.01, ** p<0.05, * p <0.1

Table A6: Program Effects on Middle of Year Outcomes in Year Following Treatment, Alternate Models, Cohort 2 (AY2019-2020)

	Model 2		Model 3		Model 4	
	ITT	TOT	ITT	TOT	ITT	TOT
Math GPA	0.059	0.079	0.040	0.055	0.055	0.075
	(0.066)	(0.088)	(0.067)	(0.089)	(0.073)	(0.099)
Proportion of Math Courses Failed	-0.014	-0.019	-0.015	-0.020	-0.015	-0.020
	(0.012)	(0.016)	(0.014)	(0.019)	(0.014)	(0.019)
Overall GPA	0.033	0.045	0.045	0.061	0.051	0.069
	(0.051)	(0.068)	(0.050)	(0.066)	(0.056)	(0.075)
Proportion of Overall Courses Failed	-0.007	-0.009	-0.010	-0.013	-0.009	-0.013
	(0.008)	(0.010)	(0.009)	(0.012)	(0.009)	(0.012)
Non-Math GPA	0.019	0.026	0.036	0.048	0.042	0.057
	(0.052)	(0.069)	(0.051)	(0.067)	(0.056)	(0.075)
Proportion of Non-Math Courses Failed	-0.005	-0.007	-0.008	-0.011	-0.008	-0.011
	(0.008)	(0.010)	(0.009)	(0.012)	(0.009)	(0.012)
Baseline Covariates	No	No	Yes	Yes	No	No
Students with Missing Baseline Data	Yes	Yes	No	No	No	No

Notes. Program effects estimated using 3 alternate models on Middle of Year Outcomes in year following treatment during AY2020-2021. In Model 2, we estimate treatment effects on sample of students who were randomized into Saga Technology in AY2019-2020, by controlling for randomization blocks and no baseline covariates. In Model 3, program effects are estimated by controlling for the following baseline covariates: age, race/ethnicity, English language learner status, diverse learner status, socioeconomic status, math GPA, non-math GPA, proportion of courses failed, proportion of math courses failed, proportion of non-math courses failed, standardized math and reading test scores, number of days absent from school, number of in-school disciplinary incidents, number of days of out-of-school suspensions, and randomization blocks. These treatment effects are estimated on the sample of students with available baseline data. In Model 4, program effects are estimated by controlling for randomization blocks, on sample of students who were randomized into Saga Technology in AY2019-2020, excluding students with missing baseline data. GPA is on a 0.00-4.00 point scale using only core classes (Math, Science, Social Studies, and English). To construct standardized test scores, we gather individual test scores for the reading and math sections from the Spring test date each year and generate a z-score using the control mean and standard deviation of the scores. Number of days absent include excused and unexcused absences. We measure out-of-school suspensions as the total number of days a student is suspended during the school year. *** p<0.01, ** p<0.05, * p <0.1

Table A7: Program Effects on End of Year Outcomes in Year Following Treatment, Alternate Models, Cohort 2 (AY2019-2020)

	Model 2		Model 3		Model 4	
	ITT	TOT	ITT	TOT	ITT	TOT
Math GPA	0.041	0.054	0.026	0.035	0.042	0.057
	(0.059)	(0.078)	(0.060)	(0.079)	(0.066)	(0.087)
Proportion of Math Courses Failed	-0.017	-0.022	-0.018	-0.025	-0.019	-0.025
	(0.010)	(0.014)	(0.012)	(0.017)	(0.012)	(0.017)
Overall GPA	0.032	0.042	0.034	0.045	0.046	0.062
	(0.049)	(0.065)	(0.047)	(0.063)	(0.054)	(0.071)
Proportion of Overall Courses Failed	-0.010	-0.013	-0.012	-0.016	-0.012	-0.017
	(0.008)	(0.010)	(0.009)	(0.012)	(0.009)	(0.012)
Non-Math GPA	0.019	0.026	0.030	0.040	0.040	0.054
	(0.049)	(0.065)	(0.048)	(0.064)	(0.054)	(0.072)
Proportion of Non-Math Courses Failed	-0.008	-0.011	-0.011	-0.014	-0.011	-0.014
	(0.008)	(0.010)	(0.009)	(0.012)	(0.009)	(0.012)
Number of Days Absent	-3.319	-4.470	-2.732	-3.678	-3.378	-4.538
	(2.057)	(2.747)	(2.099)	(2.779)	(2.329)	(3.098)
Number of Disciplinary incidents	0.015	0.021	0.009	0.012	0.015	0.022
	(0.010)	(0.015)	(0.010)	(0.014)	(0.013)	(0.018)
Baseline Covariates	No	No	Yes	Yes	No	No
Students with Missing Baseline Data	Yes	Yes	No	No	No	No

Notes. Program effects estimated using 3 alternate models on End of Year Outcomes in year following treatment during AY2020-2021. In Model 2, we estimate treatment effects on sample of students who were randomized into Saga Technology in AY2019-2020, by controlling for randomization blocks and no baseline covariates. In Model 3, program effects are estimated by controlling for the following baseline covariates: age, race/ethnicity, English language learner status, diverse learner status, socioeconomic status, math GPA, non-math GPA, proportion of courses failed, proportion of math courses failed, proportion of non-math courses failed, standardized math and reading test scores, number of days absent from school, number of in-school disciplinary incidents, number of days of out-of-school suspensions, and randomization blocks. These treatment effects are estimated on the sample of students with available baseline data. In Model 4, program effects are estimated by controlling for randomization blocks, on sample of students who were randomized into Saga Technology in AY2019-2020, excluding students with missing baseline data. GPA is on a 0.00-4.00 point scale using only core classes (Math, Science, Social Studies, and English). To construct standardized test scores, we gather individual test scores for the reading and math sections from the Spring test date each year and generate a z-score using the control mean and standard deviation of the scores. Number of days absent include excused and unexcused absences. We measure out-of-school suspensions as the total number of days a student is suspended during the school year. *** p<0.01, ** p<0.05, * p <0.1

Table A8: Heterogenous Treatment Effects on EOY Non-Math Outcomes, Cohort 1

	Reading Test Scores		Non-Math GPA		Prop. of Non-Math Failures	
	ITT	TOT	ITT	TOT	ITT	TOT
Gender						
Girls	-0.107	-0.153	-0.035	-0.042	0.015	0.018
	(0.080)	(0.110)	(0.054)	(0.062)	(0.015)	(0.017)
Boys	-0.013	-0.018	0.062	0.077	-0.006	-0.007
	(0.082)	(0.108)	(0.057)	(0.069)	(0.017)	(0.020)
T-test (Girls/Boys)	0.409	0.379	0.214	0.201	0.354	0.349
Race/Ethnicity						
Black	-0.162	-0.220	-0.064	-0.072	0.031	0.035
	(0.147)	(0.188)	(0.080)	(0.087)	(0.025)	(0.027)
Latinx	-0.084	-0.113	0.028	0.033	0.003	0.004
	(0.067)	(0.085)	(0.052)	(0.060)	(0.015)	(0.017)
Other	0.148	0.276	-0.006	-0.008	-0.009	-0.012
	(0.160)	(0.294)	(0.085)	(0.109)	(0.023)	(0.029)
T-test (Latinx/Black)	0.631	0.606	0.340	0.318	0.345	0.336
Baseline Math GPA						
Bottom Quartile (Q1)	0.366*	0.619**	-0.023	-0.028	0.039	0.046
	(0.200)	(0.316)	(0.078)	(0.088)	(0.031)	(0.034)
Quartile 2	-0.001	-0.001	0.097	0.114	-0.023	-0.027
	(0.089)	(0.105)	(0.072)	(0.081)	(0.022)	(0.024)
Quartile 3	-0.194*	-0.274**	-0.036	-0.043	0.011	0.013
	(0.106)	(0.140)	(0.077)	(0.087)	(0.016)	(0.018)
Top Quartile (Q4)	0.034	0.051	0.062	0.080	-0.005	-0.006
	(0.144)	(0.197)	(0.087)	(0.107)	(0.012)	(0.015)
T-test (Q 1/2)	0.094*	0.062*	0.261	0.237	0.099*	0.081*
T-test (Q 1/3)	0.014**	0.010***	0.908	0.902	0.417	0.392
T-test (Q 1/4)	0.178	0.127	0.467	0.435	0.183	0.160
Joint F-test (Q 1,2,3,4)	0.087*	0.057*	0.541	0.490	0.335	0.284
Baseline Math Test Scores						
Bottom Quartile (Q1)	-0.077	-0.110	0.012	0.015	0.010	0.012
	(0.090)	(0.118)	(0.077)	(0.090)	(0.027)	(0.032)
Quartile 2	-0.068	-0.089	-0.004	-0.005	0.016	0.019
	(0.104)	(0.123)	(0.086)	(0.097)	(0.023)	(0.026)
Quartile 3	-0.089	-0.124	-0.015	-0.017	0.010	0.011
	(0.144)	(0.182)	(0.086)	(0.091)	(0.022)	(0.023)
Top Quartile (Q4)	-0.042	-0.060	0.029	0.037	-0.003	-0.004
	(0.113)	(0.150)	(0.074)	(0.089)	(0.016)	(0.019)
T-test (Q 1/2)	0.949	0.900	0.890	0.882	0.867	0.868
T-test (Q 1/3)	0.942	0.949	0.816	0.806	0.994	0.985
T-test (Q 1/4)	0.807	0.794	0.870	0.858	0.683	0.664
Joint F-test (Q 1,2,3,4)	0.993	0.992	0.981	0.977	0.909	0.900

Notes. Quartiles 1-4 mentioned under baseline Math GPA and baseline math test scores are quartiles created using students' baseline EOY math GPA and baseline EOY standardized math test scores, respectively. The value displayed for T-test and F-tests are p-values. T-test (Q1/2), T-test (Q1/3), and T-test (Q1/4) signify T-tests between Quartile 1 and 2, Quartile 1 and 3, and Quartile 1 and 4, respectively. *** p<0.01, ** p<0.05, * p <0.1

Table A9: Heterogeneous Treatment Effects on EOY GPA, Cohort 1

	Overall GPA		Prop. of Overall Failures	
	ITT	TOT	ITT	TOT
Gender				
Girls	0.020	0.023	0.002	0.002
	(0.052)	(0.060)	(0.015)	(0.017)
Boys	0.093*	0.116*	-0.012	-0.014
	(0.055)	(0.067)	(0.016)	(0.020)
T-test (Girls/Boys)	0.332	0.304	0.545	0.529
Race/Ethnicity				
Black	-0.026	-0.030	0.029	0.032
	(0.079)	(0.085)	(0.024)	(0.025)
Latinx	0.084*	0.102*	-0.010	-0.013
	(0.051)	(0.059)	(0.015)	(0.017)
Other	0.010	0.013	-0.013	-0.018
	(0.081)	(0.104)	(0.022)	(0.028)
T-test (Latinx/Black)	0.238	0.204	0.161	0.143
Baseline Math GPA				
Bottom Quartile (Q1)	0.017	0.020	0.027	0.032
	(0.075)	(0.084)	(0.030)	(0.033)
Quartile 2	0.147**	0.173**	-0.036*	-0.043*
	(0.070)	(0.078)	(0.021)	(0.023)
Quartile 3	0.010	0.012	0.006	0.008
	(0.077)	(0.086)	(0.015)	(0.017)
Top Quartile (Q4)	0.057	0.075	-0.005	-0.007
	(0.083)	(0.103)	(0.011)	(0.013)
T-test (Q 1/2)	0.207	0.185	0.082*	0.067*
T-test (Q 1/3)	0.945	0.942	0.541	0.519
T-test (Q 1/4)	0.718	0.681	0.312	0.283
Joint F-test (Q 1,2,3,4)	0.514	0.471	0.268	0.221
Baseline Math Test Scores				
Bottom Quartile (Q1)	0.067	0.083	-0.004	-0.005
	(0.075)	(0.087)	(0.027)	(0.031)
Quartile 2	0.044	0.053	0.001	0.002
	(0.084)	(0.095)	(0.023)	(0.026)
Quartile 3	0.024	0.027	0.006	0.007
	(0.085)	(0.090)	(0.021)	(0.022)
Top Quartile (Q4)	0.055	0.070	-0.011	-0.013
	(0.072)	(0.087)	(0.016)	(0.019)
T-test (Q 1/2)	0.840	0.817	0.887	0.880
T-test (Q 1/3)	0.706	0.659	0.776	0.768
T-test (Q 1/4)	0.910	0.917	0.826	0.810
Joint F-test (Q 1,2,3,4)	0.985	0.975	0.931	0.914

Notes. Quartiles 1-4 mentioned under baseline math GPA and baseline math test scores are quartiles created using students' baseline EOY math GPA and baseline EOY standardized math test scores, respectively. The value displayed for T-test and F-tests are p-values. *** p<0.01, ** p<0.05, * p <0.1

Table A10: Heterogeneous Treatment Effects on EOY Behavioral Outcomes, Cohort 1

	Days Absent		OSS		Num. of Disc. Incidents	
	ITT	TOT	ITT	TOT	ITT	TOT
Gender						
Girls	-0.143	-0.172	-0.051	-0.063	0.057	0.070
	(1.184)	(1.390)	(0.099)	(0.120)	(0.074)	(0.089)
Boys	0.147	0.186	0.023	0.030	0.111	0.147
	(1.357)	(1.680)	(0.098)	(0.127)	(0.079)	(0.102)
T-test (Girls/Boys)	0.872	0.870	0.599	0.596	0.614	0.567
Race/Ethnicity						
Black	1.729	1.976	-0.108	-0.125	0.093	0.108
	(1.771)	(1.939)	(0.183)	(0.203)	(0.129)	(0.143)
Latinx	-0.352	-0.435	-0.010	-0.014	0.095	0.123
	(1.247)	(1.480)	(0.106)	(0.131)	(0.073)	(0.091)
Other	-1.416	-1.925	0.026	0.035	-0.075	-0.104
	(1.913)	(2.495)	(0.055)	(0.073)	(0.080)	(0.106)
T-test (Latinx/Black)	0.337	0.323	0.643	0.644	0.993	0.929
Baseline Math GPA						
Bottom Quartile (Q1)	0.369	0.449	0.051	0.063	0.253	0.313*
	(2.582)	(2.970)	(0.182)	(0.213)	(0.162)	(0.190)
Quartile 2	-0.925	-1.110	-0.051	-0.064	-0.029	-0.036
	(1.577)	(1.792)	(0.149)	(0.175)	(0.105)	(0.124)
Quartile 3	0.921	1.127	-0.104	-0.134	0.048	0.061
	(1.339)	(1.550)	(0.095)	(0.117)	(0.061)	(0.074)
Top Quartile (Q4)	-1.083	-1.436	0.017	0.024	0.015	0.021
	(1.269)	(1.601)	(0.038)	(0.050)	(0.078)	(0.102)
T-test (Q 1/2)	0.669	0.653	0.664	0.647	0.145	0.124
T-test (Q 1/3)	0.850	0.840	0.450	0.418	0.236	0.218
T-test (Q 1/4)	0.614	0.576	0.858	0.860	0.186	0.176
Joint F-test (Q 1,2,3,4)	0.697	0.655	0.658	0.622	0.518	0.476
Baseline Math Test Scores						
Bottom Quartile (Q1)	-1.192	-1.492	-0.107	-0.138	-0.018	-0.023
	(2.494)	(2.953)	(0.101)	(0.123)	(0.137)	(0.166)
Quartile 2	1.013	1.244	0.236*	0.295*	0.264**	0.329**
	(1.871)	(2.169)	(0.139)	(0.165)	(0.116)	(0.137)
Quartile 3	1.937	2.255	-0.093	-0.114	-0.076	-0.093
	(1.652)	(1.817)	(0.164)	(0.191)	(0.109)	(0.127)
Top Quartile (Q4)	-1.354	-1.748	-0.089	-0.119	0.009	0.012
	(1.231)	(1.507)	(0.077)	(0.098)	(0.079)	(0.100)
T-test (Q 1/2)	0.479	0.455	0.046**	0.035**	0.117	0.102
T-test (Q 1/3)	0.296	0.280	0.940	0.917	0.741	0.738
T-test (Q 1/4)	0.954	0.938	0.885	0.905	0.863	0.855
Joint F-test (Q 1,2,3,4)	0.377	0.325	0.183	0.140	0.158	0.123

Notes. Quartiles 1-4 mentioned under baseline math GPA and baseline math test scores are quartiles created using students' baseline EOY math GPA and baseline EOY standardized math test scores, respectively. The value displayed for T-test and F-tests are p-values. T-test (Q1/2), T-test (Q1/3), and T-test (Q1/4) signify T-tests between Quartile 1 and 2, Quartile 1 and 3, and Quartile 1 and 4, respectively. *** p<0.01, ** p<0.05, * p <0.1

Table A11: Heterogeneous Treatment Effects on MOY Math Outcomes, Cohort 1

	Math GPA		Prop. of Math Failures	
	ITT	TOT	ITT	TOT
Gender				
Girls	0.184***	0.219***	-0.055***	-0.066***
	(0.067)	(0.078)	(0.020)	(0.024)
Boys	0.169**	0.211**	-0.013	-0.017
	(0.071)	(0.087)	(0.022)	(0.027)
T-test (Girls/Boys)	0.878	0.947	0.165	0.174
Race/Ethnicity				
Black	0.065	0.074	0.005	0.006
	(0.102)	(0.110)	(0.032)	(0.034)
Latinx	0.249***	0.301***	-0.056***	-0.068***
	(0.067)	(0.078)	(0.021)	(0.024)
Other	0.044	0.059	-0.012	-0.016
	(0.100)	(0.129)	(0.029)	(0.038)
T-test (Latinx/Black)	0.133	0.092*	0.108	0.080*
Baseline Math GPA				
Bottom Quartile (Q1)	0.164	0.195*	-0.040	-0.047
	(0.103)	(0.116)	(0.044)	(0.050)
Quartile 2	0.253***	0.298***	-0.076***	-0.090***
	(0.093)	(0.103)	(0.028)	(0.031)
Quartile 3	0.134	0.161	0.000	0.000
	(0.096)	(0.109)	(0.021)	(0.024)
Top Quartile (Q4)	0.025	0.032	-0.007	-0.009
	(0.103)	(0.126)	(0.007)	(0.009)
T-test (Q 1/2)	0.517	0.507	0.480	0.466
T-test (Q 1/3)	0.834	0.830	0.417	0.391
T-test (Q 1/4)	0.340	0.342	0.461	0.446
Joint F-test (Q 1,2,3,4)	0.427	0.434	0.084*	0.065*
Baseline Math Test Scores				
Bottom Quartile (Q1)	0.240**	0.297**	-0.066*	-0.082*
	(0.100)	(0.117)	(0.040)	(0.047)
Quartile 2	0.219**	0.264**	-0.028	-0.034
	(0.104)	(0.119)	(0.031)	(0.035)
Quartile 3	0.096	0.108	-0.003	-0.004
	(0.118)	(0.125)	(0.027)	(0.028)
Top Quartile (Q4)	0.052	0.066	-0.032	-0.040
	(0.091)	(0.109)	(0.021)	(0.025)
T-test (Q 1/2)	0.883	0.841	0.455	0.415
T-test (Q 1/3)	0.351	0.269	0.191	0.152
T-test (Q 1/4)	0.164	0.147	0.449	0.436
Joint F-test (Q 1,2,3,4)	0.455	0.402	0.613	0.521

Notes. Quartiles 1-4 mentioned under baseline math GPA and baseline math test scores are quartiles created using students' baseline EOY math GPA and baseline EOY standardized math test scores, respectively. The value displayed for T-test and F-tests are p-values. T-test (Q1/2), T-test (Q1/3), and T-test (Q1/4) signify T-tests between Quartile 1 and 2, Quartile 1 and 3, and Quartile 1 and 4, respectively. *** p<0.01, ** p<0.05, * p <0.1

Table A12: Heterogeneous Treatment Effects on MOY Non-Math Outcomes, Cohort 1

	Non-Math GPA		Prop. of Non-Math Failures	
	ITT	TOT	ITT	TOT
Gender				
Girls	0.020	0.024	0.002	0.002
	(0.054)	(0.062)	(0.015)	(0.018)
Boys	0.063	0.079	-0.007	-0.008
	(0.059)	(0.072)	(0.017)	(0.020)
T-test (Girls/Boys)	0.593	0.567	0.710	0.700
Race/Ethnicity				
Black	-0.012	-0.013	0.011	0.012
	(0.082)	(0.089)	(0.026)	(0.028)
Latinx	0.043	0.053	0.005	0.006
	(0.054)	(0.063)	(0.015)	(0.018)
Other	0.046	0.061	-0.024	-0.032
	(0.084)	(0.109)	(0.023)	(0.030)
T-test (Latinx/Black)	0.575	0.545	0.848	0.853
Baseline Math GPA				
Bottom Quartile (Q1)	-0.015	-0.018	0.029	0.035
	(0.082)	(0.092)	(0.032)	(0.036)
Quartile 2	0.105	0.123	-0.033	-0.039
	(0.074)	(0.083)	(0.021)	(0.024)
Quartile 3	0.026	0.032	0.002	0.002
	(0.078)	(0.088)	(0.015)	(0.018)
Top Quartile (Q4)	0.120	0.156	0.000	-0.001
	(0.083)	(0.103)	(0.009)	(0.012)
T-test (Q 1/2)	0.277	0.253	0.110	0.092*
T-test (Q 1/3)	0.713	0.697	0.446	0.421
T-test (Q 1/4)	0.247	0.208	0.379	0.355
Joint F-test (Q 1,2,3,4)	0.590	0.530	0.379	0.329
Baseline Math Test Scores				
Bottom Quartile (Q1)	0.079	0.097	-0.005	-0.006
	(0.080)	(0.094)	(0.028)	(0.033)
Quartile 2	0.034	0.041	0.009	0.011
	(0.087)	(0.099)	(0.024)	(0.027)
Quartile 3	-0.011	-0.012	0.004	0.005
	(0.086)	(0.092)	(0.021)	(0.022)
Top Quartile (Q4)	0.057	0.072	-0.003	-0.004
	(0.076)	(0.091)	(0.015)	(0.018)
T-test (Q 1/2)	0.707	0.680	0.708	0.693
T-test (Q 1/3)	0.450	0.406	0.808	0.799
T-test (Q 1/4)	0.845	0.847	0.960	0.960
Joint F-test (Q 1,2,3,4)	0.891	0.855	0.970	0.964

Notes. Quartiles 1-4 mentioned under baseline math GPA and baseline math test scores are quartiles created using students' baseline EOY math GPA and baseline EOY standardized math test scores, respectively. The value displayed for T-test and F-tests are p-values. *** p<0.01, ** p<0.05, * p <0.1

Table A13: Heterogeneous Treatment Effects on MOY GPA, Cohort 1

	Overall GPA		Prop. of Overall Failures	
	ITT	TOT	ITT	TOT
Gender				
Girls	0.062	0.073	-0.012	-0.014
	(0.052)	(0.061)	(0.015)	(0.017)
Boys	0.090	0.112	-0.008	-0.011
	(0.056)	(0.069)	(0.016)	(0.019)
T-test (Girls/Boys)	0.718	0.675	0.866	0.883
Race/Ethnicity				
Black	0.007	0.008	0.009	0.010
	(0.079)	(0.086)	(0.023)	(0.025)
Latinx	0.094*	0.113*	-0.010	-0.012
	(0.052)	(0.061)	(0.015)	(0.017)
Other	0.047	0.063	-0.020	-0.027
	(0.079)	(0.102)	(0.022)	(0.028)
T-test (Latinx/Black)	0.361	0.315	0.506	0.480
Baseline Math GPA				
Bottom Quartile (Q1)	0.026	0.031	0.012	0.015
	(0.078)	(0.088)	(0.031)	(0.034)
Quartile 2	0.143**	0.169**	-0.045**	-0.052**
	(0.071)	(0.080)	(0.020)	(0.022)
Quartile 3	0.053	0.064	0.002	0.002
	(0.077)	(0.087)	(0.015)	(0.017)
Top Quartile (Q4)	0.098	0.128	-0.002	-0.002
	(0.079)	(0.098)	(0.008)	(0.009)
T-test (Q 1/2)	0.267	0.245	0.121	0.103
T-test (Q 1/3)	0.804	0.791	0.751	0.738
T-test (Q 1/4)	0.516	0.461	0.657	0.636
Joint F-test (Q 1,2,3,4)	0.697	0.655	0.210	0.172
Baseline Math Test Scores				
Bottom Quartile (Q1)	0.121	0.150*	-0.019	-0.024
	(0.078)	(0.091)	(0.027)	(0.032)
Quartile 2	0.078	0.094	-0.001	-0.002
	(0.085)	(0.096)	(0.023)	(0.026)
Quartile 3	0.014	0.015	0.002	0.002
	(0.084)	(0.090)	(0.020)	(0.021)
Top Quartile (Q4)	0.059	0.074	-0.010	-0.012
	(0.073)	(0.088)	(0.014)	(0.017)
T-test (Q 1/2)	0.709	0.674	0.615	0.589
T-test (Q 1/3)	0.348	0.291	0.530	0.495
T-test (Q 1/4)	0.557	0.548	0.757	0.750
Joint F-test (Q 1,2,3,4)	0.822	0.768	0.919	0.896

Notes. Quartiles 1-4 mentioned under baseline math GPA and baseline math test scores are quartiles created using students' baseline EOY math GPA and baseline EOY standardized math test scores, respectively. The value displayed for T-test and F-tests are p-values. *** p<0.01, ** p<0.05, * p <0.1

Table A14: Heterogeneous Treatment Effects on MOY Math Outcomes, Cohort 2

	Math GPA		Prop. of Math Failures	
	ITT	TOT	ITT	TOT
Gender				
Girls	0.179**	0.221**	-0.030	-0.037
	(0.072)	(0.086)	(0.022)	(0.027)
Boys	0.121	0.174	-0.078***	-0.113***
	(0.078)	(0.109)	(0.026)	(0.037)
T-test (Girls/Boys)	0.583	0.735	0.166	0.101
Race/Ethnicity				
Black	0.114	0.149	-0.033	-0.043
	(0.088)	(0.110)	(0.028)	(0.034)
Latinx	0.235***	0.309***	-0.076***	-0.100***
	(0.080)	(0.101)	(0.027)	(0.034)
Other	0.069	0.100	-0.063	-0.090
	(0.142)	(0.196)	(0.042)	(0.059)
T-test (Latinx/Black)	0.313	0.284	0.263	0.236
Baseline Math GPA				
Bottom Quartile (Q1)	0.344***	0.432***	-0.117***	-0.146***
	(0.095)	(0.113)	(0.042)	(0.050)
Quartile 2	0.091	0.120	-0.050	-0.066
	(0.101)	(0.125)	(0.033)	(0.041)
Quartile 3	0.070	0.094	-0.035	-0.047
	(0.103)	(0.131)	(0.024)	(0.031)
Top Quartile (Q4)	0.276	0.581*	0.001	0.002
	(0.169)	(0.344)	(0.035)	(0.069)
T-test (Q 1/2)	0.067*	0.064*	0.208	0.208
T-test (Q 1/3)	0.051*	0.050*	0.093*	0.090*
T-test (Q 1/4)	0.724	0.682	0.030**	0.079*
Joint F-test (Q 1,2,3,4)	0.156	0.110	0.183	0.265
Baseline Math Test Scores				
Bottom Quartile (Q1)	0.013	0.016	-0.004	-0.005
	(0.104)	(0.123)	(0.040)	(0.047)
Quartile 2	0.281***	0.361***	-0.117***	-0.151***
	(0.107)	(0.130)	(0.037)	(0.045)
Quartile 3	0.313***	0.439***	-0.078**	-0.110**
	(0.111)	(0.145)	(0.036)	(0.049)
Top Quartile (Q4)	0.106	0.149	-0.054**	-0.075**
	(0.108)	(0.143)	(0.022)	(0.030)
T-test (Q 1/2)	0.072*	0.053*	0.038**	0.025**
T-test (Q 1/3)	0.049**	0.026**	0.172	0.123
T-test (Q 1/4)	0.534	0.481	0.280	0.209
Joint F-test (Q 1,2,3,4)	0.147	0.092*	0.197	0.147

Notes. Quartiles 1-4 mentioned under baseline math GPA and baseline math test scores are quartiles created using students' baseline EOY math GPA and baseline EOY standardized math test scores, respectively. The value displayed for T-test and F-tests are p-values. *** p<0.01, ** p<0.05, * p <0.1

Table A15: Heterogeneous Treatment Effects on MOY Non-Math Outcomes, Cohort 2

	Non-Math GPA		Prop. of Non-Math Failures	
	ITT	TOT	ITT	TOT
Gender				
Girls	0.082	0.101	-0.016	-0.020
	(0.061)	(0.073)	(0.017)	(0.020)
Boys	0.050	0.072	-0.016	-0.023
	(0.062)	(0.087)	(0.019)	(0.026)
T-test (Girls/Boys)	0.709	0.797	0.991	0.908
Race/Ethnicity				
Black	0.013	0.017	-0.022	-0.028
	(0.073)	(0.091)	(0.022)	(0.027)
Latinx	0.128**	0.168**	-0.017	-0.023
	(0.064)	(0.081)	(0.019)	(0.023)
Other	0.030	0.043	-0.012	-0.017
	(0.118)	(0.163)	(0.029)	(0.041)
T-test (Latinx/Black)	0.236	0.213	0.879	0.881
Baseline Math GPA				
Bottom Quartile (Q1)	0.146*	0.184**	-0.055**	-0.070**
	(0.076)	(0.091)	(0.028)	(0.033)
Quartile 2	0.115	0.151	-0.022	-0.030
	(0.081)	(0.100)	(0.024)	(0.030)
Quartile 3	-0.049	-0.066	0.007	0.009
	(0.087)	(0.110)	(0.020)	(0.025)
Top Quartile (Q4)	0.092	0.194	0.019	0.039
	(0.146)	(0.293)	(0.018)	(0.036)
T-test (Q 1/2)	0.779	0.807	0.375	0.371
T-test (Q 1/3)	0.093*	0.081*	0.069*	0.058*
T-test (Q 1/4)	0.746	0.973	0.025**	0.024**
Joint F-test (Q 1,2,3,4)	0.373	0.327	0.118	0.102
Baseline Math Test Scores				
Bottom Quartile (Q1)	0.127	0.160	-0.027	-0.034
	(0.084)	(0.100)	(0.029)	(0.034)
Quartile 2	0.070	0.090	-0.022	-0.029
	(0.086)	(0.105)	(0.026)	(0.031)
Quartile 3	0.132	0.185	-0.054**	-0.076**
	(0.095)	(0.125)	(0.026)	(0.035)
Top Quartile (Q4)	0.007	0.010	0.016	0.023
	(0.092)	(0.121)	(0.021)	(0.028)
T-test (Q 1/2)	0.638	0.629	0.908	0.913
T-test (Q 1/3)	0.965	0.877	0.486	0.392
T-test (Q 1/4)	0.339	0.341	0.225	0.195
Joint F-test (Q 1,2,3,4)	0.745	0.725	0.196	0.156

Notes. Quartiles 1-4 mentioned under baseline math GPA and baseline math Test Scores are quartiles created using students' baseline EOY math GPA and baseline EOY standardized math test scores, respectively. The value displayed for T-test and F-tests are p-values. *** p<0.01, ** p<0.05, * p <0.1

Table A16: Heterogeneous Treatment Effects on MOY GPA, Cohort 2

	Overall GPA		Prop. of Overall Failures	
	ITT	TOT	ITT	TOT
Gender				
Girls	0.104*	0.129*	-0.020	-0.024
	(0.058)	(0.070)	(0.016)	(0.019)
Boys	0.059	0.085	-0.030*	-0.043*
	(0.060)	(0.085)	(0.018)	(0.025)
T-test (Girls/Boys)	0.584	0.690	0.679	0.557
Race/Ethnicity				
Black	0.034	0.044	-0.024	-0.031
	(0.070)	(0.086)	(0.021)	(0.026)
Latinx	0.146**	0.192**	-0.031*	-0.040*
	(0.062)	(0.079)	(0.018)	(0.023)
Other	0.043	0.062	-0.025	-0.036
	(0.113)	(0.156)	(0.029)	(0.040)
T-test (Latinx/Black)	0.230	0.206	0.801	0.782
Baseline Math GPA				
Bottom Quartile (Q1)	0.188***	0.238***	-0.067**	-0.085***
	(0.073)	(0.087)	(0.027)	(0.032)
Quartile 2	0.111	0.147	-0.031	-0.040
	(0.078)	(0.097)	(0.023)	(0.029)
Quartile 3	-0.029	-0.039	-0.002	-0.003
	(0.084)	(0.106)	(0.019)	(0.024)
Top Quartile (Q4)	0.130	0.274	0.016	0.033
	(0.134)	(0.271)	(0.018)	(0.035)
T-test (Q 1/2)	0.471	0.485	0.303	0.301
T-test (Q 1/3)	0.050**	0.043**	0.048**	0.041**
T-test (Q 1/4)	0.704	0.897	0.010***	0.012**
Joint F-test (Q 1,2,3,4)	0.270	0.224	0.054*	0.060*
Baseline Math Test Scores				
Bottom Quartile (Q1)	0.087	0.110	-0.020	-0.026
	(0.082)	(0.097)	(0.028)	(0.033)
Quartile 2	0.119	0.153	-0.045*	-0.058*
	(0.083)	(0.101)	(0.025)	(0.030)
Quartile 3	0.180**	0.251**	-0.061**	-0.085**
	(0.090)	(0.118)	(0.025)	(0.034)
Top Quartile (Q4)	0.026	0.036	0.002	0.002
	(0.088)	(0.116)	(0.019)	(0.025)
T-test (Q 1/2)	0.787	0.759	0.517	0.478
T-test (Q 1/3)	0.448	0.357	0.286	0.211
T-test (Q 1/4)	0.609	0.623	0.516	0.501
Joint F-test (Q 1,2,3,4)	0.666	0.615	0.210	0.172

Notes. Quartiles 1-4 mentioned under baseline math GPA and baseline math test scores are quartiles created using students' baseline EOY math GPA and baseline EOY standardized math test scores, respectively. The value displayed for T-test and F-tests are p-values. *** p<0.01, ** p<0.05, * p <0.1

Table A17: ALEKS Usage, Cohort 2

	N	Observed in ALEKS data (%)	ALEKS Usage	Mean	Median	25th %tile	75th %tile
Treatment Group							
Participants	771	93.26	Time Spent (hrs)	20.96	22.83	15.65	27.37
			# Topics Attempted	117.85	111.00	65.00	165.00
			# Topics Learned	84.71	80.00	42.00	118.00
			Time Spent per week (hrs)	0.87	0.95	0.65	1.14
Non-Participants	261	0.00	Time Spent (hrs)	.	.	.	.
			# Topics Attempted	.	.	.	.
			# Topics Learned	.	.	.	.
			Time Spent per week (hrs)	.	.	.	.
Control Group							
Participants	54	90.74	Time Spent (hrs)	21.74	23.83	18.13	27.00
			# Topics Attempted	130.88	141.00	83.00	181.00
			# Topics Learned	90.86	95.00	53.00	120.00
			Time Spent per week (hrs)	0.91	0.99	0.76	1.13
Non-Participants	755	0.26	Time Spent (hrs)	16.02	16.02	4.90	27.15
			# Topics Attempted	105.00	105.00	17.00	193.00
			# Topics Learned	60.00	60.00	9.00	111.00
			Time Spent per week (hrs)	0.67	0.67	0.20	1.13

Notes. N signifies the number of students assigned to treatment (or control) and who took up (or didn't take up) treatment. % Observed in ALEKS represents the percentage of students who had an account on ALEKS. This variable is comprised of students who spent non-zero time on ALEKS as well as students who spent zero time on the platform. We measure ALEKS usage in terms of time spent on ALEKS in hours, total topics learned on ALEKS, and total topics attempted on ALEKS. ALEKS defines "topics attempted" as the number of topics that a student has attempted to learn, but not yet successfully completed. Moreover, ALEKS defines a "topics learned" as when a student achieves a total of 5 points per topic, where a student receives one point for each correct answer, and one point subtracted for each incorrect answer. We calculate number of weeks after excluding holidays and weekends between the start and end date of tutoring. Cohort 2 received tutoring till March 16, 2020 which is on 24 weeks of tutoring on average.

Table A18: Saga Program Cost

Input	Year One	Year Two	Total
A. Variable Costs			
Tutor stipends (Salary and Fringe)	$835,000	$835,000	$1,670,000
Recruitment	$252,000	$252,000	$504,000
Curriculum, Assessment, Tutor Training	$225,000	$225,000	$450,000
Supplies	$70,000	$70,000	$140,000
Program Management	$565,000	$565,000	$1,130,000
B. Fixed Costs			
Software	$60,000	$60,000	$120,000
Hardware	$50,000	$50,000	$100,000
Indirect	$50,000	$50,000	$100,000
C. Total Costs			
Total Cost	$2,107,000	$2,107,000	$4,214,000
Total Variable Cost	$1,947,000	$1,947,000	$3,894,000
Total Fixed Cost	$160,000	$160,000	$320,000

Notes. This table shows details of Saga's planned budget over the study

Figure A1: Total Time Spent on ALEKS, by Cohort 2, in AY2019-2020

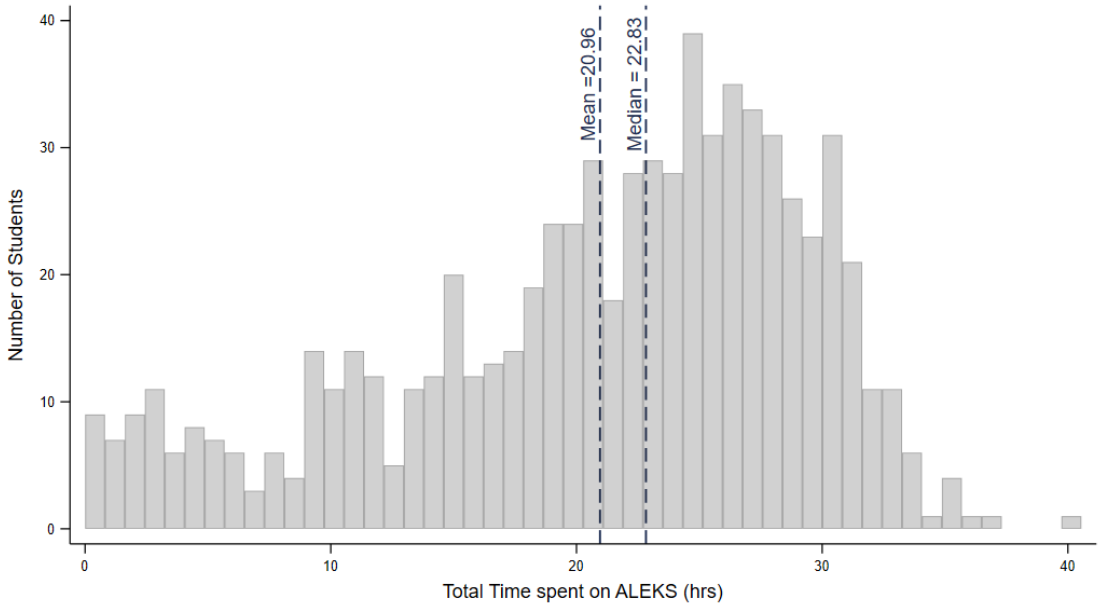
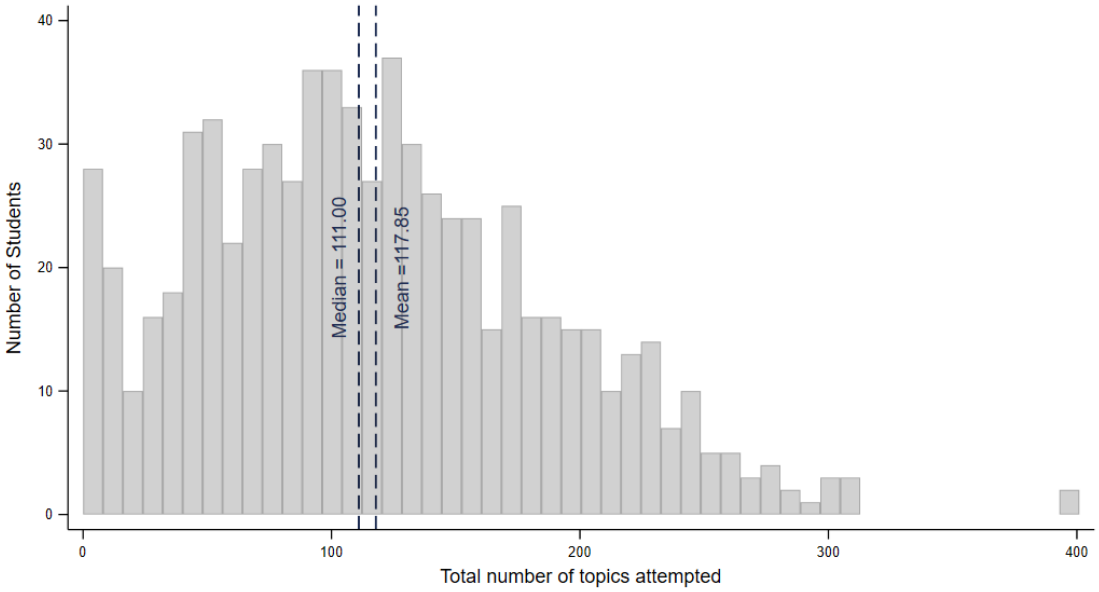
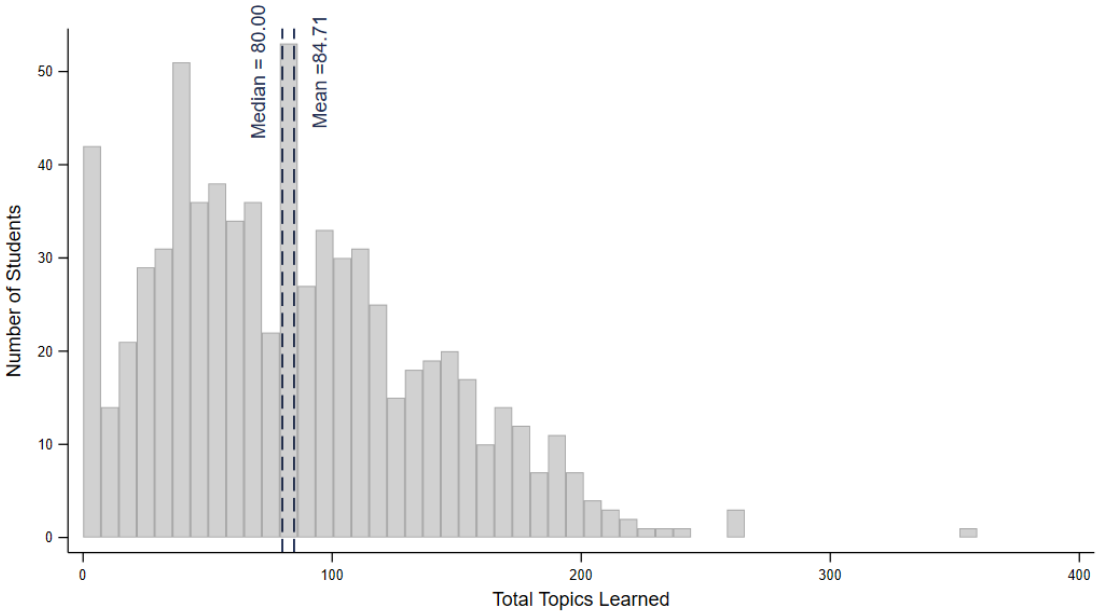


Figure A2: Total Topics Attempted on ALEKS, by Cohort 2, in AY2019-2020



Chicago (N = 246), and NYC (N = 473)
Topics Attempted - Number of topics that a student has attempted to learn, but not yet successfully completed.
Total topics attempted have been summarised till March 16th, 2020 (Before COVID-19).

Figure A3: Total Topics Learned on ALEKS, by Cohort 2, in AY2019-2020



Chicago (N = 246), and NYC (N = 473)
Topics Learned - ALEKS considers a topic learned when a student achieves a total of 5 points per topic.
Total topics learned have been summarised till March 16th, 2020 (Before COVID-19).