

# An Examination of Block Scheduling Practices and End of Course Test Performance

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### Executive Summary

Scores from the spring 2004 administration of the End of Course Test (EOCT) in eight content areas were examined for students in schools participating in a block schedule compared to those from non-block schools (“block status”). Comparisons are also presented for schools using one of three types of block schedules versus non-block schools (“block type”). Lastly, all comparisons were computed using prior CRCT Reading or CRCT Math scores as a covariate (“controlled comparisons”) to mitigate potential achievement differences between the comparison groups.

Overall, there was a very small difference between EOCT performance for non-block schools compared to block schools that favors non-block schools. The exception is Algebra where block schools slightly outperformed non-block schools. The controlled comparisons show performance differences that range from only 1 to 3 scale score points on block status. A comparison of block type revealed that non-block schools generally outperformed all block types (with the exception of Algebra) by a very slight margin. There was no pattern or uniform effect for any of the three block methods examined with respect to EOCT score.

*In sum, no scheduling method examined is consistently or meaningfully associated with higher EOCT performance.*

## An Examination of Block Scheduling Practices and End of Course Test Performance

The purpose of this report is to examine the effect of block scheduling practices on achievement as measured by each of the eight End Of Course Tests (EOCT).

### Block Schedules

Block scheduling refers to various practices that may alter the duration of the course and/or the time of each class period. Typically, one goal of a block schedule is to increase the instructional time in each class period. In a 4x4 block schedule students take four 90 minute classes each semester. In a block-8 schedule, students follow the 4x4 structure on alternating days (usually) for the entire academic year. A traditional or non-block schedule involves eight classes daily each lasting 40-50 minutes for the entire academic year.

### The EOCT

The EOCT is a criterion-referenced test that assesses what a student should know and be able to do relative to Georgia's Quality Core Curriculum (QCC). Students take the EOCT following completion of a course in Algebra, Geometry, 9<sup>th</sup> Grade Literature, American Literature, U.S. History, Economics, Physical Science, or Biology.

The EOCT yields a scale score that corresponds to three performance levels (PL). A score below 600 indicates that the student "Does Not Meet Expectations". A score of 600-629 designates that the student "Meets Expectations" for the content area. Finally, performance that "Exceeds Expectations" corresponds to scores of 630 or higher.

### Method

Mean scale scores for each of the eight EOCT were computed for all grade 9-12 students participating in block schedules compared to grade 9-12 students in a traditional schedule.

Subsequently, in order to identify the relative effects of different types of block schedules, scheduling practices were grouped into the following four categories.

1. 4x4 Block
2. Block-8
3. Other or combination of 1 and 2
4. Non-Block or Traditional Schedule

Finally, to address any potential effects due to differential ability between students in block and non-block schools, the above analyses were conducted with a covariate. The covariate or “controlled” analyses are important in that this better isolates the singular effect of scheduling practices.

In all content areas except Algebra and Geometry, the 8<sup>th</sup> grade Reading CRCT score was used as a covariate. The covariate used in Algebra and Geometry was 8<sup>th</sup> grade Mathematics CRCT score. CRCT scores from 2000-2003 were used, depending on the grade level of the EOCT examinee. For example, the CRCT score obtained in 2000 is used for a 12<sup>th</sup> grade EOCT examinee; the 2001 CRCT score applies to the 11<sup>th</sup> grade EOCT examinee and so forth. It is important to note that a substantial number of students were excluded from these analyses due to an inability to match some students to CRCT scores.

Findings

Table 1.1 presents the number and percent of students in grades 9-12 who took each of the eight EOCT indicated by block status.

Table 1.1

Block Status for Each EOCT Content Area, Spring 2004

			Schedule		Total
			Block	No Block	
Content	Algebra	N	37323	35770	73093
		percent	51.1%	48.9%	100.0%
	Geometry	N	25402	33191	58593
		percent	43.4%	56.6%	100.0%
	9th Grade Lit	N	38383	47763	86146
		percent	44.6%	55.4%	100.0%
	American Lit	N	29426	38349	67775
		percent	43.4%	56.6%	100.0%
	Biology	N	36898	46885	83783
		percent	44.0%	56.0%	100.0%
	Physical Science	N	30710	32138	62848
		percent	48.9%	51.1%	100.0%
	US History	N	30748	38388	69136
		percent	44.5%	55.5%	100.0%
	Economics	N	20486	18375	38861
		percent	52.7%	47.3%	100.0%
Total	N		249376	290859	540235
	percent		46.2%	53.8%	100.0%

Table 1.2 presents the number and percent of students in grades 9-12 who took each of the eight EOCT indicated by block schedule type.

Table 1.2

Block Status by Type for Each EOCT Content Area, Spring 2004

			Block Type				Total
			4x4 Block	Block 8	Other/ Combination Block	No Block	
Content	Algebra	N	25565	4316	7442	35770	73093
		Percent	35.0%	5.9%	10.2%	48.9%	100.0%
	Geometry	N	16430	4080	4892	33191	58593
		Percent	28.0%	7.0%	8.3%	56.6%	100.0%
	9th Grade Lit	N	26045	5798	6540	47763	86146
		Percent	30.2%	6.7%	7.6%	55.4%	100.0%
	American Lit	N	19488	4756	5182	38349	67775
		Percent	28.8%	7.0%	7.6%	56.6%	100.0%
	Biology	N	24622	5865	6411	46885	83783
		Percent	29.4%	7.0%	7.7%	56.0%	100.0%
	Physical Science	N	21373	4577	4760	32138	62848
		Percent	34.0%	7.3%	7.6%	51.1%	100.0%
	US History	N	20043	4949	5756	38388	69136
		Percent	29.0%	7.2%	8.3%	55.5%	100.0%
	Economics	N	14267	2114	4105	18375	38861
		Percent	36.7%	5.4%	10.6%	47.3%	100.0%
Total	N		167833	36455	45088	290859	540235
	Percent		31.1%	6.7%	8.3%	53.8%	100.0%

Table 1.3 and Figure 1.1 show mean scale scores of grade 9-12 students on each EOCT content area by block status.

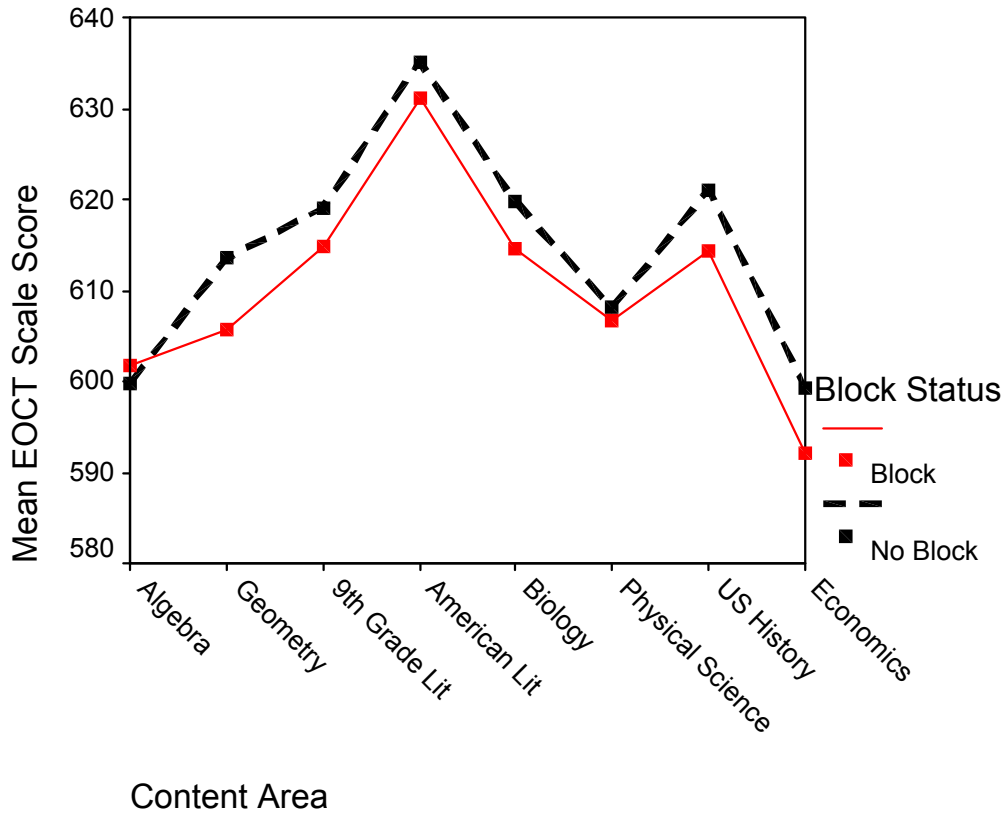
Table 1.3

Mean Scale Score by Block Status and EOCT Content Area,  
Spring 2004

Content	Block Status	Mean	N
Algebra	Block	601.78	37323
	No Block	599.73	35770
	Total	600.78	73093
Geometry	Block	605.77	25402
	No Block	613.52	33191
	Total	610.16	58593
9th Grade Lit	Block	614.93	38383
	No Block	619.02	47763
	Total	617.20	86146
American Lit	Block	631.14	29426
	No Block	635.17	38349
	Total	633.42	67775
Biology	Block	614.51	36898
	No Block	619.66	46885
	Total	617.39	83783
Physical Science	Block	606.56	30710
	No Block	608.06	32138
	Total	607.32	62848
US History	Block	614.20	30748
	No Block	621.09	38388
	Total	618.02	69136
Economics	Block	592.05	20486
	No Block	599.22	18375
	Total	595.44	38861

Figure 1.1

Mean Scale Score by Block Status and EOCT Content Area,  
Spring 2004



Block Scheduling Practices/End of Course Test Performance

Table 1.4 and Figure 1.2 show mean scale scores of grade 9-12 students on each EOCT content area for all block types.

Table 1.4

Mean Scale Score by Block Type and EOCT Content Area,  
Spring 2004

Scale Score			
Content Area	Block Type	Mean	N
Algebra	4x4 Block	600.50	25565
	Block 8	599.19	4316
	Combination Block	607.66	7442
	No Block	599.73	35770
	Total	600.78	73093
Geometry	4x4 Block	605.00	16430
	Block 8	604.60	4080
	Combination Block	609.35	4892
	No Block	613.52	33191
	Total	610.16	58593
9th Grade Lit	4x4 Block	613.72	26045
	Block 8	617.57	5798
	Combination Block	617.40	6540
	No Block	619.02	47763
	Total	617.20	86146
American Lit	4x4 Block	629.37	19488
	Block 8	633.88	4756
	Combination Block	635.29	5182
	No Block	635.17	38349
	Total	633.42	67775
Biology	4x4 Block	613.17	24622
	Block 8	616.57	5865
	Combination Block	617.74	6411
	No Block	619.66	46885
	Total	617.39	83783
Physical Science	4x4 Block	606.59	21373
	Block 8	605.07	4577
	Combination Block	607.84	4760
	No Block	608.06	32138
	Total	607.32	62848
US History	4x4 Block	611.19	20043
	Block 8	617.79	4949
	Combination Block	621.58	5756
	No Block	621.09	38388
	Total	618.02	69136
Economics	4x4 Block	588.69	14267
	Block 8	602.66	2114
	Combination Block	598.27	4105
	No Block	599.22	18375
	Total	595.44	38861



Figure 1.2

Mean Scale Score by Block Status and EOCT Content Area,  
Spring 2004

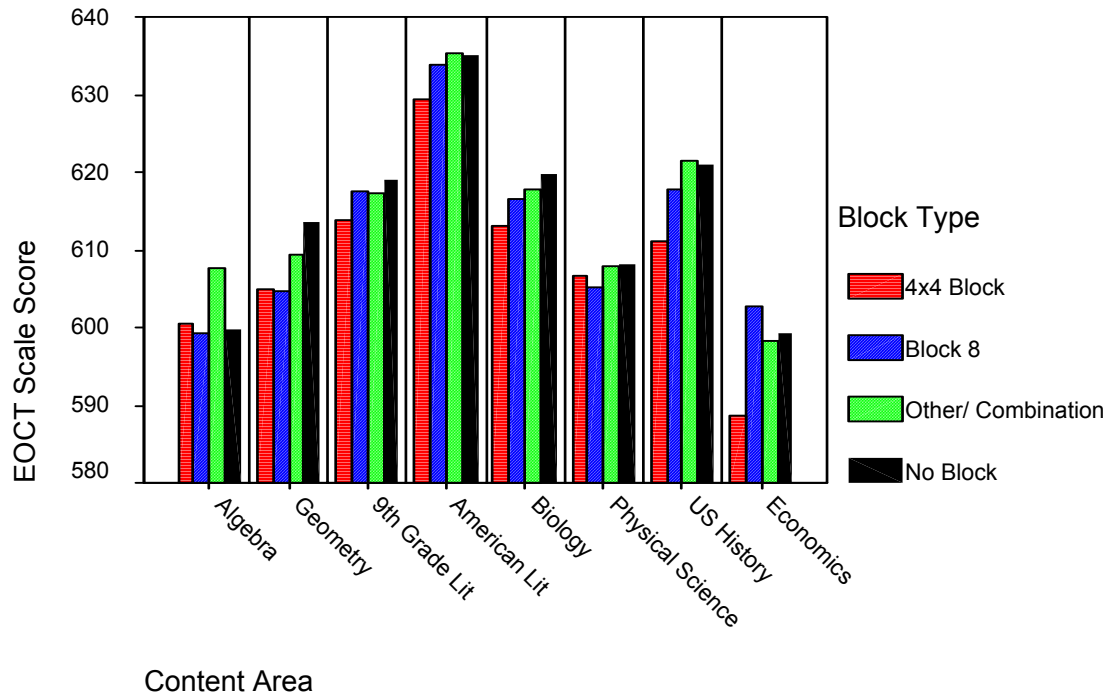


Table 1.5 and Figure 1.3 present results for block status when ‘controlled’ on student ability using CRCT scores as a covariate. The estimated means indicate the predicated EOCT mean scale score for students with the same CRCT performance.

Table 1.5

Estimated Mean EOCT Scale Scores by Block Status with Covariate

	Correlation with covariate	Estimated Mean Scale Score for Block	N Block	Estimated Mean Scale Score for Non-Block	N Non-Block
9th Grade Literature	0.744	617.25	32912	618.45	41199
American Literature	0.674	633.48	22300	635.26	29034
Algebra	0.642	603.88	30635	600.16	29199
Geometry	0.648	609.75	20204	612.89	26696
Physical Science	0.609	607.35	25406	608.71	26620
Biology	0.666	616.79	30081	619.52	38517
US History	0.642	617.13	23579	620.66	29099
Economics	0.608	588.97	10525	589.39	9114

Figure 1.3

Estimated Mean EOCT Scale Scores by Block Status with Covariate

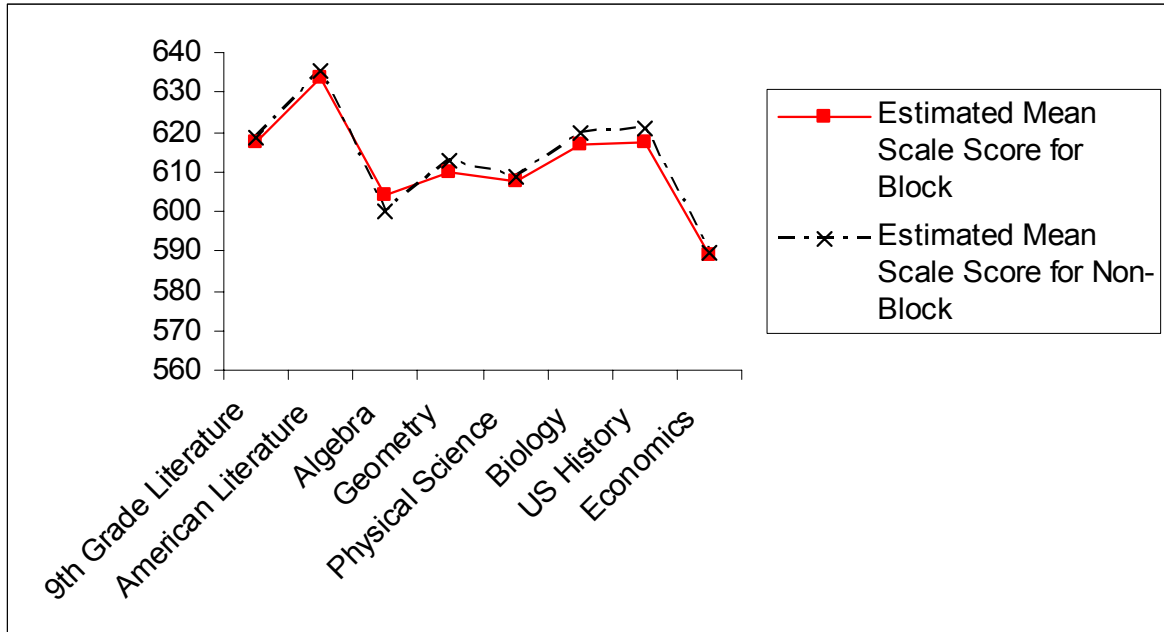


Table 1.6 and Figure 1.4 show mean scale scores of grade 9-12 students on each EOCT content area for all block types, controlling for student ability with prior grade 8 CRCT Reading or CRCT Math score.

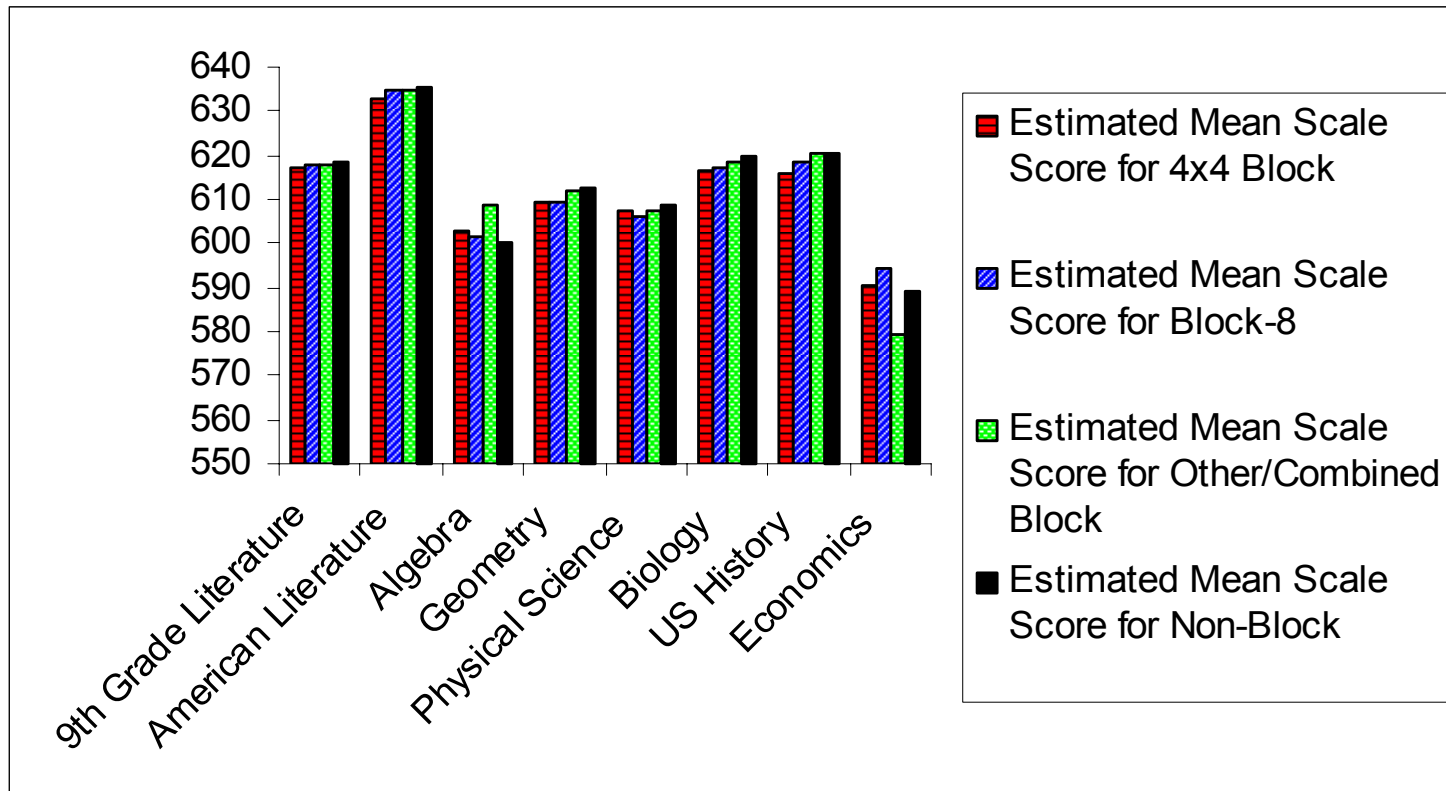
Table 1.6

Estimated Mean EOCT Scale Scores by Block Type with Covariate

	Correlation with covariate	Estimated Mean Scale Score for 4x4 Block	N 4x4 Block	Estimated Mean Scale Score for Block-8	N Block-8	Estimated Mean Scale Score for Other/Combined Block	N Other/ Combined	Estimated Mean Scale Score for Non-Block	N Non-Block
9th Grade Literature	0.744	617.01	22484	617.95	5006	617.56	5422	618.45	41199
American Literature	0.674	632.79	15117	634.75	3385	635.04	3798	635.26	29034
Algebra	0.642	602.96	21187	601.34	3517	608.66	5931	600.16	29199
Geometry	0.648	609.19	13272	609.32	3173	612.04	3759	612.89	26696
Physical Science	0.609	607.57	17754	606.16	3810	607.52	3842	608.71	26620
Biology	0.666	616.21	20298	617.39	4683	618.57	5100	619.52	38517
US History	0.642	615.80	15788	618.67	3530	620.75	4261	620.67	29099
Economics	0.608	590.56	8051	594.17	758	579.23	1716	589.39	9114

Figure 1.4

Estimated Mean EOCT Scale Scores by Block Type with Covariate



### Conclusion

Overall, there is a very small difference between EOCT performance for non-block schools compared to block schools that favors non-block schools. The exception is Algebra where block schools slightly outperformed non-block schools. The uncontrolled comparisons reveal performance differences of about 1 to 8 scale score points. The controlled comparisons show performance differences that range from only 1 to 3 scale score points on block status.

A comparison of block type revealed that non-block schools generally outperformed all block types (with the exception of Algebra) by a very slight margin. There was no pattern or uniform effect for any of the three block methods examined with respect to EOCT score. Both the uncontrolled and controlled comparisons show performance differences that range from about 1 to 10 scale score points. However the number of block types differing by more than 3 scale score points is reduced with the controlled comparisons. In fact, in the controlled comparisons for all block types fully five of eight content areas show scale score ranges of no more than 3 scale score points across all four block conditions. The most variance for these comparisons is found in economics, which is not unexpected given the much smaller sample size.

*In sum, no scheduling practice examined is consistently or meaningfully associated with higher EOCT performance.*

### Limitations

It should be noted that a school's designation as "block" does not guarantee that a student took the specific course examined in a block format. That is, some block conditions only apply to some courses. This is particularly true for schools where the block practice is labeled "other/combined".

While prior CRCT scores serve as a useful control for student ability, other factors, such as the demographic composition of the students in each condition, should be examined more carefully to better isolate the source of performance differences.

Finally, the EOCT administered in the spring of 2004 precedes the requirement that schools use EOCT scores as 15% of the determination of a student's grade in the course. Since the use of the EOCT as an accountability assessment likely differed among schools and systems for this administration, it should not be assumed that the motivation of all examinees in each condition was consistent.