



Public Schools of North Carolina
State Board of Education
Department of Public Instruction

Report to the State Board of Education

School Calendar Impact on Achievement

School Calendar Impact on Achievement Report

The school calendars implemented in North Carolina include block, traditional, and year-round. High schools operate on either (1) a semester calendar, often referred to as a block schedule, or (2) a traditional calendar from August to June. The majority of elementary schools follow a traditional calendar, but there are some year-round schools that have intermittent breaks, most often three-week breaks, throughout a full-year calendar which begins in July and ends the following June. This report provides information on the student achievement by school calendar and offers possible explanations for differences.

Background Information

The information provided for End-of-Grade (EOG) and End-of-Course (EOC) data include all school testing data submitted for the 2013–14 accountability year. The information presented in the following tables is based upon students enrolled in each calendar type and school type. Within the designation of year-round schools there are calendar variances. Some schools operate on a single track calendar, where the entire school is in session and on break at the same time (typically a 45 /15 model). Some schools utilize a multi-track year-round calendar meaning that at any given time one track is always on break while the remaining student population is in session. Additionally, there are year-round schools that operate on a modified year-round calendar with a longer break in the summer and shorter breaks during the school year.

Table 1. *End-of-Grade Reading (Grades 3–8) 2013–14: Traditional vs. Year-Round Calendar*

Grade Level	Calendar Type	Number of Students	Reading Scale Score (Mean)	Percent Proficient Level 3 and Above	Percent Proficient Level 4 and Above
Grade 3	Traditional	102,334	440.2	60.5%	47.4%
Grade 3	Year-Round	9,021	442.8	69.6%	58.2%
Grade 4	Traditional	95,458	445.5	56.4%	45.0%
Grade 4	Year-Round	8,252	447.8	65.5%	55.3%
Grade 5	Traditional	102,476	449.9	54.6%	40.7%
Grade 5	Year-Round	8,625	452.0	63.3%	50.1%
Grade 6	Traditional	104,508	452.4	58.2%	46.8%
Grade 6	Year-Round	6,573	454.4	65.7%	54.4%
Grade 7	Traditional	107,235	455.7	58.8%	48.8%
Grade 7	Year-Round	5,947	457.6	66.1%	56.9%
Grade 8	Traditional	106,561	458.8	55.3%	43.2%
Grade 8	Year-Round	5,494	460.8	63.3%	51.2%

Table 1 shows students in year-round schools earned higher scale scores and had more students score at Level 3 and above and Level 4 and above on the Grades 3–8 Reading End-of-Grade (EOG) assessments compared to students in traditional calendar schools.

Table 2. *End-of-Grade Math (Grades 3–8) 2013–14: Traditional vs. Year-Round Calendar*

Grade Level	Calendar Type	Number of Students	Math Scale Score (Mean)	Percent Proficient Level 3 and Above	Percent Proficient Level 4 and Above
Grade 3	Traditional	103,465	449.9	61.3%	48.4%
Grade 3	Year-Round	9,162	452.5	70.4%	59.4%
Grade 4	Traditional	96,198	449.4	54.7%	47.3%
Grade 4	Year-Round	8,331	451.9	64.5%	57.8%
Grade 5	Traditional	103,303	450.0	57.0%	51.0%
Grade 5	Year-Round	8,727	452.5	67.3%	61.4%
Grade 6	Traditional	105,343	449.7	47.5%	40.2%
Grade 6	Year-Round	6,621	451.9	56.7%	49.7%
Grade 7	Traditional	108,020	449.8	46.8%	39.7%
Grade 7	Year-Round	5,979	452.1	57.8%	50.8%
Grade 8	Traditional	107,224	449.9	42.9%	35.3%
Grade 8	Year-Round	5,516	451.8	51.9%	43.7%

Table 2 shows students in year-round schools earned higher scale scores and had more students score at Level 3 and above and Level 4 and above on the Grades 3–8 Math End-of-Grade (EOG) assessments compared to students in traditional calendar schools.

Table 3. *End-of-Grade Science (Grades 5 & 8) 2013–14: Traditional vs. Year-Round Calendar*

Grade Level	Calendar Type	Number of Students	Science Scale Score (Mean)	Percent Proficient Level 3 and Above	Percent Proficient Level 4 and Above
Grade 5	Traditional	103,378	251.8	65.1%	53.2%
Grade 5	Year-Round	8,819	253.4	71.4%	60.2%
Grade 8	Traditional	107,283	250.7	72.6%	63.1%
Grade 8	Year-Round	5,330	252.3	78.6%	68.8%

Table 3 shows students in year-round schools earned higher scale scores and had more students score at Level 3 and above and Level 4 and above on the Grade 5 and 8 Science End-of-Grade (EOG) assessments compared to students in traditional calendar schools.

Table 4. *End-of-Course Biology 2013–14: Block vs. Traditional Calendar Analysis by School Schedule*

Calendar Type	School Type	Number of Students	Biology Scale Score (Mean)	Percent Proficient Level 3 and Above	Percent Proficient Level 4 and Above
Block	All Schools	98,064	250.0	53.3%	44.5%
Mixed	All Schools	2,998	249.5	51.1%	42.9%
Traditional	All Schools	8,843	253.4	66.8%	58.4%

Table 4 shows students taking Biology in traditional calendar schools had higher scale scores and had more students score at Level 3 and above and Level 4 and above compared to students in block or mixed calendar schools.

Table 5. *End-of-Course Biology 2013–14: Block vs. Traditional Calendar Analysis by Test Administration*

Test Administration	Number of Students	Biology Scale Score (Mean)	Percent Proficient Level 3 and Above	Percent Proficient Level 4 and Above
Fall (4x4)	48,402	249.9	53.1%	44.2%
Spring (4x4)	51,407	250.0	53.4%	44.6%
Traditional	10,028	253.1	65.7%	57.4%
Summer ¹	303	242.1	20.5%	15.2%
Other ¹	69	241.8	17.4%	13.0%

Table 5 shows students taking Biology in traditional calendar schools earned higher scale scores and had more students score at Level 3 and above and Level 4 and above on the Biology End-of-Course (EOC) assessment compared to students in 4x4 block calendar schools.

¹This data was included for students testing during summer school and other EOC administrations such as early testers, Credit by Demonstrated Mastery, etc.

Table 6. *End-of-Course English II 2013–14: Block vs. Traditional Calendar Analysis by School Schedule*

Calendar Type	School Type	Number of Students	English II Scale Score (Mean)	Percent Proficient Level 3 and Above	Percent Proficient Level 4 and Above
Block	All Schools	95,843	149.8	60.3%	50.6%
Mixed	All Schools	6,715	149.8	60.4%	50.9%
Traditional	All Schools	10,213	154.5	78.0%	69.9%

Table 6 shows students taking English II in traditional calendar schools had higher scale scores and had more students score at Level 3 and above and Level 4 and above on the English II End-of-Course (EOC) assessment compared to students in block or mixed calendar schools.

Table 7. *End-of-Course English II 2013–14: Block vs. Traditional Calendar Analysis by Test Administration*

Test Administration	Number of Students	English II Scale Score (Mean)	Percent Proficient Level 3 and Above	Percent Proficient Level 4 and Above
Fall (4X4)	46,346	149.9	60.4%	50.6%
Spring (4X4)	54,378	149.7	59.6%	50.2%
Traditional	12,047	154.4	77.7%	69.5%
Summer ¹	450	143.3	29.8%	22.7%

Table 7 shows students taking English II in traditional calendar schools earned higher scale scores and had more students score at Level 3 and above and Level 4 and above on the English II End-of-Course (EOC) assessment compared to students in 4x4 block calendar schools

¹This data was included for students testing during summer school.

Table 8. *End-of-Course Math I 2013–14: Block vs. Traditional Calendar Analysis by School Schedule*

Calendar Type	School Type	Number of Students	Math I Scale Score (Mean)	Percent Proficient Level 3 and Above	Percent Proficient Level 4 and Above
Block	All Schools	73,950	246.9	38.2%	23.9%
Mixed	All Schools	9,745	249.8	47.6%	35.6%
Traditional	All Schools	40,646	256.7	80.6%	69.4%

Table 8 shows students taking Math I in traditional calendar schools had higher scale scores and had more students score at Level 3 and above and Level 4 and above on the Math I End-of-Course (EOC) assessment compared to students in block or mixed calendar schools. Of the 40,646 students included in the traditional EOC Math I group, approximately 36,000 were middle school students.

Table 9. *End-of-Course Math I 2013–14: Block vs. Traditional Calendar Analysis by Test Administration*

Test Administration	Number of Students	Math I Scale Score (Mean)	Percent Proficient Level 3 and Above	Percent Proficient Level 4 and Above
Fall (4x4)	29,168	247.8	42.7%	28.3%
Spring (4x4)	49,699	246.4	35.6%	21.5%
Traditional	45,186	256.2	78.1%	67.0%
Summer ¹	518	243.5	17.6%	13.9%
Other ¹	1,991	258.3	85.9%	76.2%

Table 9 shows students taking Math I in traditional calendar schools earned higher scale scores and had more students score at Level 3 and above and Level 4 and above on the Math I End-of-Course (EOC) assessment compared to students in 4x4 block calendar schools.

¹This data was included for students testing during summer school and other EOC administrations such as early testers, Credit by Demonstrated Mastery, etc.

Summary

Students at grades 3–8 in year-round schools obtained higher scale scores and had more students score at Level 3 and above and Level 4 and above on the Reading, Math, and Science EOG assessments compared to students in traditional calendar schools.

Students taking Biology, English II, and Math I in traditional calendar schools earned higher scale scores and had more students score at Level 3 and above and Level 4 and above on the Biology, English II, and Math I EOC assessments compared to students in block or mixed calendar schools.

The citation for the NAEP statute is 115C-105.40 Student academic performance standards. It is pasted below:

§ 115C-105.40. Student academic performance standards.

The State Board of Education shall develop a plan to create rigorous student academic performance standards for kindergarten through eighth grade and student academic performance standards for courses in grades 9-12. The performance standards shall align, whenever possible, with the student academic performance standards developed for the National Assessment of Educational Progress (NAEP). The plan also shall include clear and understandable methods of reporting individual student academic performance to parents. (1997-221, s. 3(e).)

The charts that follow are from the National Assessment of Educational Progress (NAEP).

The National Assessment of Educational Progress (NAEP) is an assessment program conducted by the National Center for Education Statistics (NCES) to inform the public of what elementary and secondary students in the United States know and can do in various subject areas, including reading, mathematics, and science. Since 1969, NAEP, also known as The Nation's Report Card™, has been administered periodically to students at grades 4, 8, and 12 in order to report results for the nation, participating states, and selected large urban school districts.

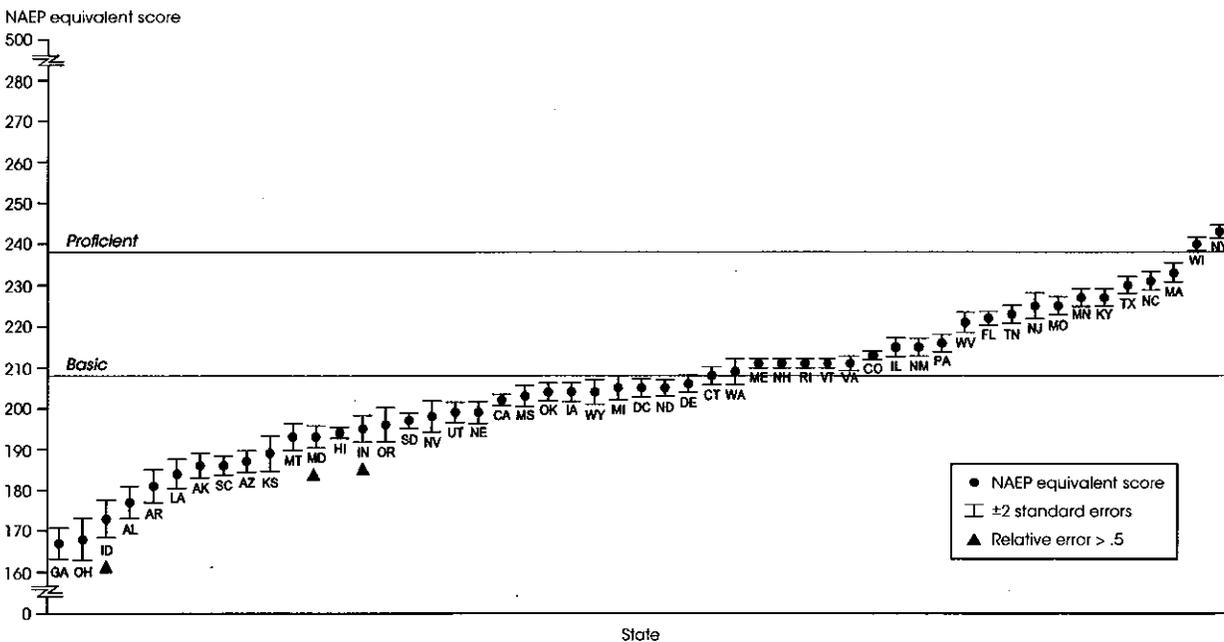
2013 Grade 4 Reading

Figure 1 shows the NAEP equivalent score for each state's grade 4 reading standard for proficient performance. The horizontal lines that run across the figure indicate the cut points for NAEP *Proficient* and *Basic* performance. The vertical line drawn through each state's NAEP equivalent score indicates the margin of error associated with the estimate. A black triangle under a state abbreviation in figure 1 indicates that the relative error associated with the NAEP equivalent of that state's standards is greater than .5 and results should be interpreted with caution.⁸

Across states, the average NAEP equivalent score was 205, below NAEP's definition of *Basic* performance (*Basic* performance is set at 208 and *Proficient* at 238).

The difference between the NAEP equivalent reading scores of the states with the lowest and highest proficiency standards, Georgia and New York, respectively, was 76 points on the NAEP 0–500 scale. This difference is about twice the size of the standard deviation on the 2013 NAEP grade 4 reading assessment (37 points) and more than twice the 30-point distance between the NAEP *Basic* and the NAEP *Proficient* standards. The range widened 11 points from 2011 and 13 points from 2009 (table 1).^{9,10}

Figure 1. NAEP scale equivalents of state grade 4 reading standards for proficient performance, by state: 2013



SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics, National Assessment of Educational Progress (NAEP), 2013 Reading Assessment.

⁸ Although NAEP results are reported on a 0–500 point scale for different grades and subjects, they do not have the same meaning across subjects or grades. Therefore, the results shown in the figures are not comparable across grades or subjects.

⁹ The standard deviation provides an indication of how much the test scores vary. The lower the standard deviation, the closer the scores are clustered around the average score. About 95 percent of the student scores can be expected to fall within the range of two standard deviations above and two standard deviations below the average score. For example, if the average score of a data set is 250 and the standard deviation is 35, it means that approximately 95 percent of the scores fall between 180 (250 - 70) and 320 (250 +70).

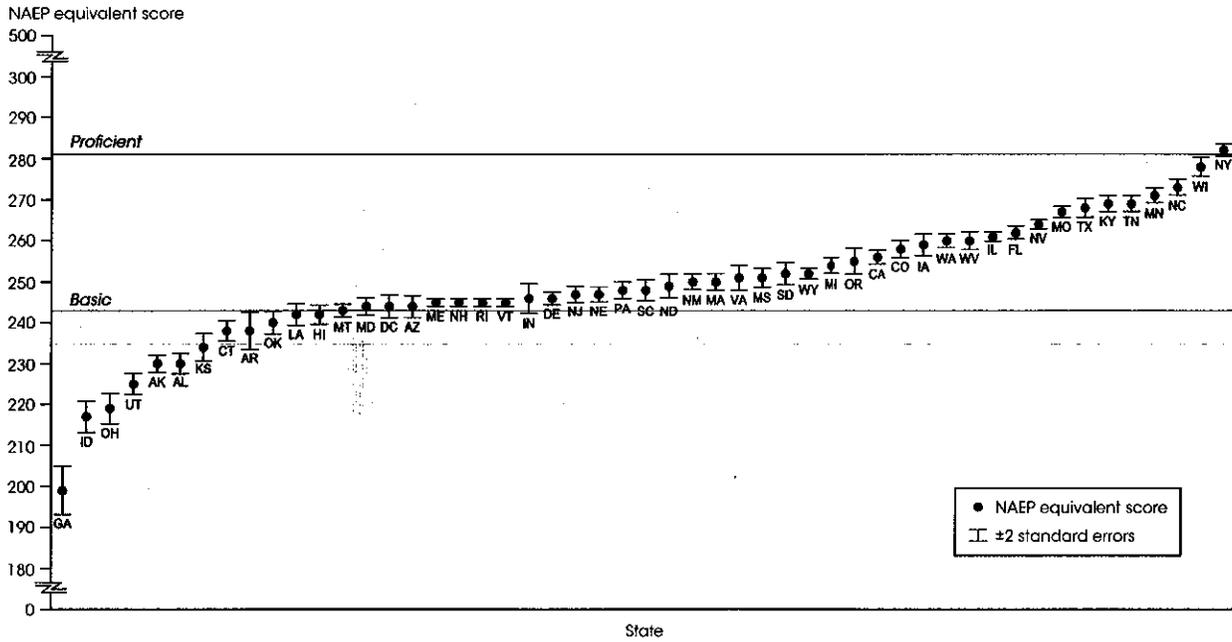
¹⁰ Table C-1 of appendix C displays the standard deviations of the scores of the NAEP reading and mathematics assessments in grades 4 and 8.

2013 Grade 8 Reading

Figure 4 shows the NAEP scale equivalents of state performance at the proficient level in grade 8 reading. For grade 8 reading, NAEP set the cut point for *Basic* performance at 243 and for

Proficient performance at 281. The average NAEP equivalent score for state performance at the proficient level was 249, which is within the NAEP *Basic* range.

Figure 4. NAEP scale equivalents of state grade 8 reading standards for proficient performance, by state: 2013



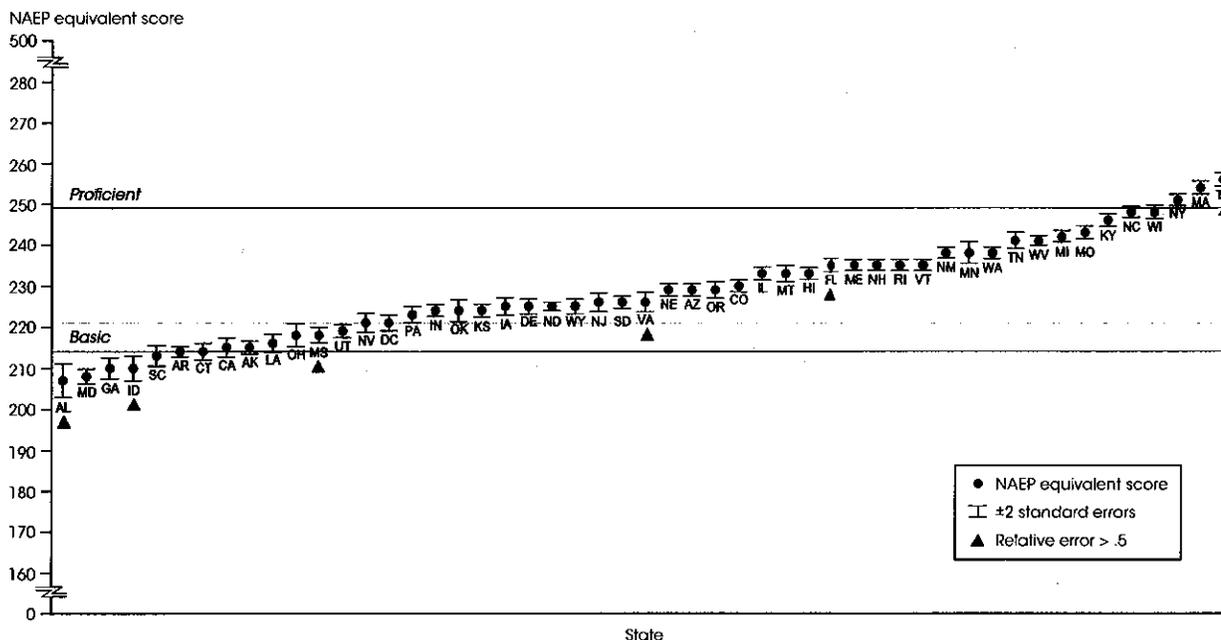
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics, National Assessment of Educational Progress (NAEP), 2013 Reading Assessment.

2013 Grade 4 Mathematics

Figure 2 shows the NAEP equivalent score for each state's standard for proficient performance in mathematics for grade 4, as well as markers for the NAEP *Basic* and *Proficient*

standards. For grade 4 mathematics, the NAEP cut point for *Basic* performance is 214, and the cut point for *Proficient* performance is 249. The average NAEP scale equivalent score was 229, which is within the NAEP *Basic* range.

Figure 2. NAEP scale equivalents of state grade 4 mathematics standards for proficient performance, by state: 2013



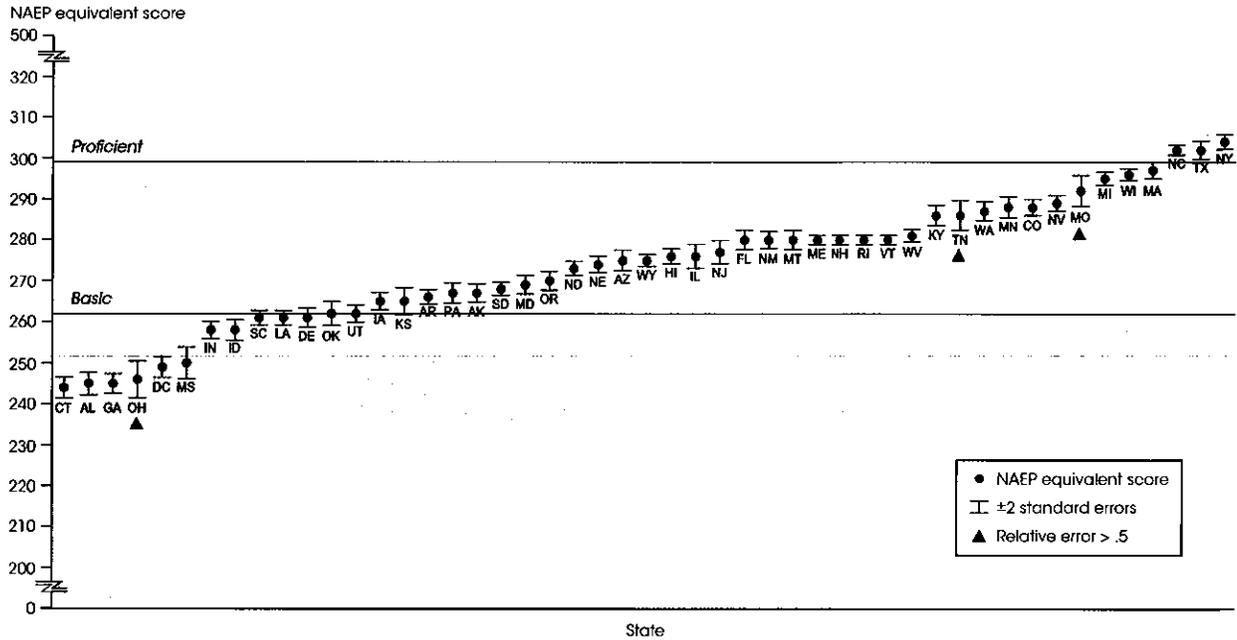
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics, National Assessment of Educational Progress (NAEP), 2013 Mathematics Assessment.

2013 Grade 8 Mathematics

For grade 8 mathematics, the NAEP cut point for performance at the *Basic* level is 262, and the cut point for performance at

the *Proficient* level is 299. The average NAEP equivalent score for state performance at the proficient level in 2013 was 274, between the NAEP standards of *Basic* and *Proficient* (figure 5).

Figure 5. NAEP scale equivalents of state grade 8 mathematics standards for proficient performance, by state: 2013



NOTE: California and Virginia were not included because the states do not assess general mathematics in grade 8.

SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics, National Assessment of Educational Progress (NAEP), 2013 Mathematics Assessment.