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Connecticut Students Perform Higher than the Nation on NAEP Science While Large Performance Differences Between Student Groups Remain

(WASHINGTON, D.C.) Connecticut's Grade 4 and Grade 8 students scored above the national average in science on the 2009 National Assessment of Educational Progress (NAEP). Forty percent of Connecticut's fourth graders scored at or above the NAEP proficient level while thirty-five percent of eighth grade students met or exceeded the proficient benchmark.

Table 1

NAEP 2009 Science Grade 4 and 8 Performance: Connecticut and National Public Schools

	GRADE 4		GRADE 8	
	AVG. SCALE SCORE	% OF STUDENTS AT/ABOVE PROFICIENT	AVG. SCALE SCORE	% OF STUDENTS AT/ABOVE PROFICIENT
National Public	149*	32*	149*	29*
Connecticut	156	40	155	35

* indicates a statistically significant difference when compared to Connecticut performance.

The last NAEP Science administration took place in 2005. The scores released today for the 2009 Science assessment cannot be compared to the 2005 results because the 2009 assessment is based on a new and more challenging NAEP Science framework. The previous framework had been in place since 1996. While all states must participate in NAEP's biennial assessments of mathematics and reading, states are not required to participate in the science assessment. Forty-six states participated in the 2009 science assessment at Grades 4 and 8.

Overall, Connecticut's students outperformed the national averages, but a more in-depth review of the results shows large performance differences among student groups.

"The performance differences or 'achievement gaps' that we see among our student groups in mathematics, reading, and writing are presented vividly again in our NAEP science results," said Acting State Education Commissioner George Coleman. Although this particular administration of NAEP does not provide any trend data, Mr. Coleman remarked that, "Based on NAEP reports in other subjects and the results from CMT and CAPT, we know that performance differences among our student groups have been and continue to be quite large. One of the most difficult challenges facing our education community is identifying the root causes of these gaps, helping students to overcome the effects of poverty and assisting schools in addressing the dramatic differences in academic achievement throughout our state."

According to Acting Commissioner Coleman, "Connecticut benefits in many ways from having a scientifically literate population, including economic development."

“Connecticut’s Science Technology Engineering and Math (STEM) related employers are very interested in assuring that all our students are exposed to high quality science instruction. It helps them attract employees to the state; and find qualified employees within the state. With proximity to major research universities, there is great interest in building new high-tech manufacturing plants in Connecticut. But they need a workforce that is interested and educated in science and can be trained to work with sophisticated production equipment. STEM-related employers are interested in a scientifically literate population to participate in their research and to understand their products. They want kids to LIKE science and aspire to science-related careers.”

Connecticut's bioscience sector, for example, continues to generate high-paying jobs and career opportunities for qualified graduates. There are now almost 18,000 persons employed in the sector today in jobs requiring a variety of levels of preparation and skills from lab technician to PhD-level researcher. “This is why we must continue to focus on science education and to balance our public school curriculum with the appropriate mix of academic disciplines,” said Coleman.

Elizabeth Buttner, Science Curriculum Specialist for the State Department of Education points out that the *No Child Left Behind Act of 2001* has had the unintended consequence of narrowing the school curriculum, especially in elementary schools. “Efforts to achieve *Adequate Yearly Progress*, or AYP, on statewide reading and math tests have required schools to devote more instructional time to those subjects, leaving less opportunity for students to acquire the science knowledge and skills that are assessed on both NAEP and the state’s science CMT. Science can be a great way to motivate students’ interest and teach them how to read and use math while they’re learning about something that excites them, like how monarch caterpillars metamorphose into butterflies. Achievement gaps persist when elementary students without a solid foundation in scientific thinking enter middle school unprepared and uninspired to learn more advanced concepts and skills.”

“Schools that have a balanced and comprehensive curriculum find that students who see the connections among reading, writing, mathematics, science and the arts will become more proficient in all of those disciplines. In addition, many schools have not yet aligned their science curriculum with state standards,” said Commissioner Coleman. “We must assure that all students have equal opportunities to learn the science that is tested on NAEP or CMT; otherwise, how can we expect them to do well?”

Commissioner Coleman pointed out that the State Department of Education is pursuing improvements to the teaching and learning of PK-12 science. These efforts include clarification of state standards describing what science knowledge and skills all students should acquire at each grade level. Model lessons have been developed and posted on-line, along with teaching guides that help teachers maximize the effectiveness of the lessons. To assure that classroom teachers have ready access to science instructional support within their schools, the Department has devoted \$2 million of its federal Math and Science Partnership grant to the recruitment and training of master teachers to serve as instructional coaches. Over 150 teachers have taken college science courses and summer institutes focused on practicing effective science teaching strategies.

NAEP, also known as “The Nation’s Report Card,” is the only ongoing nationally representative assessment of what America’s students know and can do in various subject areas. NAEP is designed to measure student performance over long periods of time and allows states to compare the performance of their students to the performance of students in other states throughout the country.

The second administration of Grade 8 NAEP science, based on the new framework is underway now. The NAEP 2011 testing window opened on Monday, January 24, and continues through the first week of March. During this time, Connecticut eighth grade students in approximately 100 schools across the state will be participating in the assessment. Results will be released in 2012.

2009 NAEP Science Highlights: Proficiency Rates

Grade 4

(number of students tested=2700)

- The percentage of Connecticut students performing at the proficient level and above (40%) is higher than that of students across the nation (32%).
- Connecticut's Grade 4 students performed as well as or better than Grade 4 students in 42 other states. Three states (New Hampshire, North Dakota, and Virginia) had a significantly higher percentage of students scoring at or above proficient. The performance of students in 16 states was equal to that of Connecticut students, while 26 states had a significantly lower percentage of students who scored at or above proficient.
- Connecticut's male students met and exceeded the proficient level at a rate of 42% in comparison to 38% of female students. This performance difference is not statistically significant.
- While 12% of Connecticut's economically disadvantaged students performed at the proficient level and above, 52% of their non-disadvantaged peers achieved proficiency. *It should be noted that Connecticut's economically disadvantaged students represent a much smaller portion of the tested population as compared to the national average (see table 2).*
- The percentage of Connecticut white students scoring at or above the proficient level (53%) is not significantly different from the percentage of Asian/Pacific Islander students scoring at or above the proficient level (48%). The performance of both of these subgroups is higher than that of black (9%) and Hispanic students (11%).
- With regard to proficiency, white students performed above the national average, while black, Hispanic and Asian/Pacific Islander student performance was not significantly different from the national averages of their counterparts.
- The percentage of Connecticut's students with disabilities who performed at or above proficient was 21%. Nationally, the average for students with disabilities was 16%. This performance difference is not statistically significant.
- Four percent of Connecticut's English language learners scored at or above proficient while 5% of their peers nationally scored at the same level of performance. This difference is not statistically significant.

Grade 8

(number of students tested=2800)

- The percentage of Connecticut students performing at or above the proficient level (35%) is higher than that of students across the nation (29%).
- Connecticut's Grade 8 students outperformed their counterparts in 22 states relative to the percentage of students scoring at or above the proficient level. Connecticut performance was not significantly different from that of 17 states, and six states (Massachusetts, Minnesota, Montana, North Dakota, South Dakota, and Utah) outperformed Connecticut.
- Connecticut male students achieved proficiency at a rate of 38%, while 32% of female students did so. This performance difference is statistically significant. Both groups outperformed their peers nationally.
- While 12% of Connecticut's economically disadvantaged students performed at the proficient level and above, 44% of their non-disadvantaged peers achieved proficiency.
- The difference in the percentage of Asian/Pacific Islander students and white students scoring at or above the proficient level (52% and 44% respectively) was not statistically significant. However, both groups scored higher than black (9%) and Hispanic students (9%).
- With regard to proficiency, black, Hispanic, and Asian/Pacific Islander students in Connecticut performed at the same level as the national average for each of their respective subgroups while white students outperformed their peers nationally.
- The percentage of Connecticut's students with disabilities who performed at or above proficient (15%) was not significantly different than the national average for students with disabilities (11%).
- Connecticut's English language learners scored at or above proficient at the same rate as the national average for English language learners (2%).

2009 NAEP Science Highlights: Average Scale Scores

Connecticut's Grade 4 and Grade 8 student performance in terms of scale scores for each major student subgroup is reported in Tables 2 and 3. National public school data is included for comparison purposes. Additionally, the tables include columns to show the percentage of students represented in each reporting category.

Table 2

2009 NAEP Science: Grade 4 Results by Student Group

Student Group	Connecticut		National Public Schools	
	% of Students	Average Scale Score	% of Students	Average Scale Score
Male	51	156	51	149*
Female	49	155	49	148*
White	66	167	54*	162*
Black	12	129	16*	127
Hispanic	17	128	22*	130
Asian/Pacific Islander	4	164	5	160
American Indian	#	‡	1*	137
Eligible for Free/Reduced Priced Lunch	30	130	48*	134
Not Eligible for Free/Reduced Priced Lunch	70	166	51*	163*
Students with Disabilities	12	135	12	129
English Language Learners	5	109	10*	114

* Indicates a statistically significant difference when compared to Connecticut performance.

Rounds to zero.

‡ Reporting standards not met.

Note: The NAEP grade 4 science scale ranges from 0 to 300.

Table 3

2009 NAEP Science: Grade 8 Results by Student Group

Student Group	Connecticut		National Public Schools	
	% of Students	Average Scale Score	% of Students	Average Scale Score
Male	51	157	51	151*
Female	49	153	49	147*
White	70	164	56*	161*
Black	11	126	16*	125
Hispanic	15	128	21*	131
Asian/Pacific Islander	4	169	5*	159*
American Indian	#	‡	1*	138
Eligible for Free/Reduced Priced Lunch	26	130	43*	133
Not Eligible for Free/Reduced Priced Lunch	74	164	56*	161*
Students with Disabilities	12	130	11	122*
English Language Learners	3	100	5*	103

* Indicates a statistically significant difference when compared to Connecticut performance.

Rounds to zero.

‡ Reporting standards not met.

Note: The NAEP grade 8 science scale ranges from 0 to 300.