

Agenda Item: Connecticut Mastery Test & Connecticut Academic Performance Test
Science Results

Meeting Date: September 28, 2015

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This report presents the Spring 2015 results for the Science Connecticut Mastery Test (CMT) that was administered in grades 5 and 8 and the Science Connecticut Academic Performance Test (CAPT) that was administered in grade 11.

2015 CMT Science Results

The Fourth Generation Science CMT is the standard assessment administered to all students in Grades 5 and 8. The content of the test measures students’ understanding of life, earth, and physical scientific concepts; application to real-world issues; scientific inquiry; and scientific reasoning to solve problems. The test includes multiple-choice and open ended questions.

This year in science Grade 5 had an eight percentage point increase, while grade 8 showed a one percentage point decrease from 2014.

The table below summarizes the percentage of students at or above goal for science since 2006.

Overall Results: Percentage of Students by Content Area At/Above Goal for 2006-2015

| Grade Level | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 |
|-----------------|------|------|------|------|------|------|------|------|------|------|
| Grade 5 Science | NA | NA | 78 | 89 | 86 | 89 | 92 | 81 | 76 | 84 |
| Grade 8 Science | NA | NA | 92 | 90 | 88 | 89 | 84 | 88 | 90 | 89 |

A total of 278 fifth graders were tested, with 96.0% of the students scoring at or above proficiency and 83.8% of the students scoring at or above goal. In grade 8, 275 students were tested and 93.8% of the students scored at or above proficiency and 89.1% scored at or above goal.

The table below indicates the percentage of students performing in each of the five performance levels: Level 1 (Below Basic), Level 2 (Basic), Level 3 (Proficient), Level 4 (Goal), and Level 5 (Advanced). Levels 4 and 5 are considered “Mastery” by the state and Level 3 is considered “Proficient” by the federal No Child Left Behind (NCLB) Act. The majority of our students reach the “At/Above Grade Level” bands.

Percent of Students by Performance Level

| Grade | Level 1 Below Basic | Level 2 Basic | At/Above Grade Level | | |
|-------|------------------------|------------------|-----------------------|-----------------|---------------------|
| | | | Level 3 Proficient | Level 4 Goal | Level 5 Advanced |
| 5 | 2.9 | 1.1 | 12.2 | 60.1 | 23.7 |
| 8 | 2.5 | 3.6 | 4.7 | 54.5 | 34.5 |

The next section of tables detail student performance in the areas of special education, English Language Learners (ELL), free/reduced meals, and gender. The percentage of students performing in each of the five performance levels: Level 1 (Below Basic), Level 2 (Basic), Level 3 (Proficient), Level 4 (Goal), and Level 5 (Advanced) are listed in addition to the percentage of students performing at or above proficiency and at or above goal.

Percent of Special Education Learners by Performance Levels

| Grade | # Tested | Below Basic | Basic | Proficient | Goal | Advanced | % At/Above Proficiency | % At/Above Goal |
|-------|----------|-------------|-------|------------|------|----------|------------------------|-----------------|
| 5 | 24 | 12.5 | 4.2 | 25.0 | 50.0 | 8.3 | 83.3 | 58.3 |
| 8 | 21 | 28.6 | 4.8 | 23.8 | 38.1 | 4.8 | 66.7 | 42.9 |

Percent of English Language Learners by Performance Levels

| Grade | # Tested | Below Basic | Basic | Proficient | Goal | Advanced | % At/Above Proficiency | % At/Above Goal |
|-------|----------|-------------|-------|------------|------|----------|------------------------|-----------------|
| 5 | 6 | 66.7 | 0.0 | 16.7 | 16.7 | 0.0 | 33.4 | 16.7 |
| 8 | 2 | 0.0 | 50.0 | 50.0 | 0.0 | 0.0 | 50.0 | 0.0 |

Percent of Free/Reduced Meals by Performance Levels

| Grade | # Tested | Below Basic | Basic | Proficient | Goal | Advanced | % At/Above Proficiency | % At/Above Goal |
|-------|----------|-------------|-------|------------|------|----------|------------------------|-----------------|
| 5 | 14 | 7.1 | 7.1 | 50.0 | 28.6 | 7.1 | 85.7 | 35.7 |
| 8 | 9 | 0.0 | 0.0 | 11.1 | 88.9 | 0.0 | 100 | 88.9 |

Percent of Students by Gender by Performance Levels

| Group | Grade | # Tested | Below Basic | Basic | Proficient | Goal | Advanced | % At/Above Proficiency | % At/Above Goal |
|--------|-------|----------|-------------|-------|------------|------|----------|------------------------|-----------------|
| All | 5 | 278 | 2.9 | 1.1 | 12.2 | 60.1 | 23.7 | 96.0 | 83.8 |
| Male | 5 | 152 | 4.6 | 0.7 | 11.8 | 61.2 | 21.7 | 94.7 | 82.9 |
| Female | 5 | 126 | 0.8 | 1.6 | 12.7 | 58.7 | 26.2 | 97.6 | 84.9 |
| | | | | | | | | | |
| All | 8 | 275 | 2.5 | 3.6 | 4.7 | 54.5 | 34.5 | 93.7 | 89.0 |
| Male | 8 | 129 | 0.8 | 3.9 | 4.7 | 56.6 | 34.1 | 95.4 | 90.7 |
| Female | 8 | 146 | 4.1 | 3.4 | 4.8 | 52.7 | 34.9 | 92.4 | 87.6 |

The state has placed Avon in District Reference Group (DRG) B. The table below compares the performance of Avon with DRG A and similar DRG B school districts. These scores represent the percentage of students scoring at or above goal in the area of science.

Comparison of 2015 CMT Science At/Above Goal Among DRG A/B Districts

| DRG | Group | Science 5 | Science 8 |
|------------|---------------|------------------|------------------|
| A | Darien | 79.9 | 92.3 |
| A | Easton | 79.8 | 83.3 |
| A | New Canaan | 86.8 | 90.1 |
| A | Redding | 78.3 | 86.6 |
| A | Ridgefield | 78.8 | 84.9 |
| A | Weston | 90.2 | 81.1 |
| A | Westport | 84.3 | 89.3 |
| A | Wilton | 87.9 | 89.4 |
| B | Avon | 83.8 | 89.1 |
| B | Bethany | 58.7 | -- |
| B | Brookfield | 80.1 | 81.1 |
| B | Cheshire | 72.5 | 85.6 |
| B | Fairfield | 76.3 | 79.1 |
| B | Farmington | 91.2 | 85.7 |
| B | Glastonbury | 83.8 | 83.1 |
| B | Granby | 87.6 | 85.2 |
| B | Greenwich | 73.4 | 80.1 |
| B | Guilford | 76.7 | 77.9 |
| B | Madison | 80.6 | 89.1 |
| B | Monroe | 82.2 | 83.5 |
| B | New Fairfield | 75.4 | 79.1 |
| B | Orange | 76.7 | -- |
| B | Simsbury | 81.6 | 86.3 |
| B | South Windsor | 73.3 | 81.0 |
| B | Trumbull | 80.7 | 82.8 |
| B | West Hartford | 71.0 | 77.2 |
| B | Regional #15 | 71.6 | 78.2 |

Ranking for Avon DRG A: 5/9 5/9
Ranking for Avon DRG B: 3/19 1/17

2015 CAPT Science Results

The Third Generation CAPT test assesses 10th grade students on important scientific knowledge and skills from the areas of life science, physical science, and earth science. Student’s knowledge about scientific inquiry, literacy, and numeracy are imbedded in the assessment. The test is comprised of multiple choice and open-ended items that assess five equally weighted content strands:

- Energy Transformations
- Chemical Structures and Properties
- Global Interdependence
- Cell Chemistry and Biotechnology
- Genetics, Evolution and Biodiversity

The table below displays student performance in the area of Science for all students, special education, English Language Learners (ELL), free and reduced meals, and gender. The percentage of students performing in each of the five performance levels: Level 1 (Below Basic), Level 2 (Basic), Level 3 (Proficient), Level 4 (Goal), and Level 5 (Advanced) are listed in addition to the percentage of students performing at or above proficiency and at or above goal. The percentage of all students at or above proficiency remained the same while the percentage of all students at or above goal increased three percentage points from last year.

| Group | # Tested | % Below Basic | % Basic | % Proficient | % Goal | % Advanced | % At/Above Proficiency | % At/Above Goal |
|-----------|----------|---------------|---------|--------------|--------|------------|------------------------|-----------------|
| All | 254 | 1.6 | 2.4 | 16.9 | 20.9 | 58.3 | 96.1 | 79.2 |
| SPED | 24 | 12.5 | 16.7 | 33.3 | 16.7 | 20.8 | 70.8 | 37.5 |
| ELL | 1 | 0 | 0 | 0 | 100 | 0 | 100.0 | 100.0 |
| F/R Meals | 11 | 9.1 | 18.2 | 18.2 | 18.2 | 36.4 | 72.7 | 54.5 |
| Male | 121 | 1.7 | 1.7 | 14.9 | 19.8 | 62.0 | 96.7 | 81.8 |
| Female | 133 | 1.5 | 3.0 | 18.8 | 21.8 | 54.9 | 95.5 | 76.7 |

Percentage of Students At/Above Goal for 2006-2015

| Content | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 |
|---------|------|------|------|------|------|------|------|------|------|------|
| Science | 81 | 78 | 76 | 70 | 76 | 75 | 76 | 83 | 76 | 79 |

Percentage of Students At/Above Proficiency for 2006-2015

| Content | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 |
|---------|------|------|------|------|------|------|------|------|------|------|
| Science | 98 | 97 | 97 | 96 | 97 | 97 | 96 | 97 | 96 | 96 |

Avon has been placed by the state in District Reference Group (DRG) B. The tables below compare the performance of Avon with DRG A and similar DRG B school districts. These scores represent the percentage of students scoring at or above goal and at or above proficiency in science.

Avon (DRG B) Compared to DRG A Districts

| Group | At/Above Goal | At/Above Proficiency |
|----------------|---------------|----------------------|
| <i>Avon</i> | <i>79.1</i> | <i>96.1</i> |
| Darien | 74.6 | 98.8 |
| New Canaan | 87.1 | 98.8 |
| Ridgefield | 79.8 | 98.8 |
| Weston | 74.5 | 95.6 |
| Wilton | 76.4 | 97.9 |
| Region 9 | 78.6 | 98.5 |
| Ranking | 3/7 | 6/7 |

Avon Compared to Like DRG B Districts

| Group | At/Above Goal | At/Above Proficiency |
|----------------|---------------|----------------------|
| Avon | 79.1 | 96.1 |
| Brookfield | 75.3 | 94.3 |
| Cheshire | 65.7 | 93.9 |
| Fairfield | 69.8 | 94.1 |
| Farmington | 68.5 | 93.8 |
| Glastonbury | 70.7 | 94.8 |
| Granby | 46.5 | 90.3 |
| Greenwich | 69.0 | 92.4 |
| Guilford | 74.5 | 97.0 |
| Madison | 65.2 | 93.7 |
| Monroe | 72.3 | 94.8 |
| New Fairfield | 68.5 | 93.6 |
| Newtown | 73.7 | 97.1 |
| Simsbury | 81.2 | 96.2 |
| South Windsor | 70.4 | 94.9 |
| Trumbull | 75.2 | 95.5 |
| West Hartford | 71.3 | 92.8 |
| Region 5 | 73.0 | 93.2 |
| Region 15 | 70.2 | 93.5 |
| Ranking | 2/19 | 4/19 |

SUMMARY:

The 2014 CMT Science results showed the percentage of 5th grade students scoring at or above goal in science continuing the decline that began in 2012. In order to address this decline, a number of changes were implemented for the 2014-15 school year. First, the inconsistencies in the amount of time spent on direct instruction across the classrooms was addressed by creating a daily fifty minute science block. Second, six instead of twelve 5th grade teachers were responsible for delivering science instruction to all students. And third, the identified areas of study in the present curriculum were developed into units and common assessments applied. Finally, the science teachers used the data from the 2014 CMT science content standards to determine the areas of strengths and weaknesses to inform their instruction. Based on these changes, an 8% increase in students scoring at or above goal in science was realized.

In 8th grade, the percentage of students at or above goal has remained relatively stable between 2013 and 2015. The science teachers continue to administer a pretest to all 8th grade students to identify their levels of performance and knowledge in the areas of science process skills, earth science, biology and physical science. The results of the pretest are used to inform and guide instruction throughout the school year. Students who perform below the established benchmark, are provided additional support and remediation in the classroom throughout the school year.

In grade ten, the percentage of students at or above goal showed a 3% increase this year. Previous analysis of individual strands for students who did not reach goal showed that chemistry concepts was the area where students struggled most. The science department, as part of their curriculum review and revision has worked to address this identified area in grades 6-10 and it appears that these changes in curriculum and instruction are starting to yield positive results.