



## Lincoln Public Schools

Mary L. Sterling, Ph.D.  
Assistant Superintendent of Schools

To: School Committee  
From: Mary Sterling  
Re: Report on the 2013 MCAS Results  
Date: October 24, 2013

This report is the first of two reports to present the 2013 Massachusetts Comprehensive Assessment System (MCAS) testing results for the Lincoln School district. In this report three key dimensions are delineated and discussed for both the Lincoln and Hanscom schools, with appendices to provide specific data:

- I. **Performance Levels:** How did students perform relative to the expectation of proficiency in English language arts (ELA), mathematics, and science/engineering?
- II. **Progress and Performance Index (PPI):** What is the district and school “accountability” rating? How did the district and schools performance and growth compare to new state goal of reducing proficiency gaps in ELA, math, and science by 2016-17?
- III. **Student Growth:** What are some indicators of individual and grade level growth in performance over the past few years of MCAS testing?

A second report, to be presented in November, will provide information on subgroup performance, in conjunction with information from local district assessments.

### Part I Performance Levels

#### Lincoln School

**English language arts** – (see detailed scores in Appendix A)

The Lincoln School students continue to demonstrate strong performance in ELA. Taken together, 77% of students in grades 3-8 scored at proficient or higher levels. The combined total of advanced and proficient scores at grade 8 is 100%. The Lincoln School performance is well above the state level, especially in the percentage of scores at the advanced level. When comparing advanced scores at grade 3 to those at grade 8, scores increased from grade 3 at 18% to 39% at grade 8. The percentage of scores at Needs Improvement and Warning levels decline steadily through the grades to a new low of 0% in grade 8.

The cohort performance chart (Appendix A) shows that scores maintain a multiple year trend of increasing levels of achievement in the Lincoln School across grades. Highlights include these points about the combined percentage of advanced and proficient level scores over three or four years of testing, starting with grade five:

- Grade 5: 89% combined scores in 2013 compared to 79% when these students were in grade 3 in 2011, characterized by a 16 percentage point increase in advanced scores since third grade.
- Grade 6: 91% combined scores in 2013 compared to 73% when these students were in grade 4 in 2011, characterized by a 14 percentage point increase in proficient scores since grade 4.
- Grade 7: 86% combined scores compared to 71% when these students were in grade 4 in 2010, characterized by a rise of 20 percentage points in advanced scores. This is significant because these scores include results for the Long Composition, which is administered in both grade 4 and grade 7.
- Grade 8: 100% combined scores compared to 77% when these students were in grade 5 in 2010, characterized by 23 percentage point increase in combined advanced and proficient level scores.

In the *Writing* strand, the scores on the long composition for grades 4 and 7 show greater strength in “Productions and Distribution of Writing” than in “Text Types and Purposes.” The older students scored higher than the younger students in their composition performance (71% points correct at grade 7; 63% points correct at grade 4). The goal of improving composition skills will remain a priority for students in all grades, particularly in “Text Types and Purposes.”

As is true in the district and in the state, Lincoln School students perform better on multiple choice questions than they do on short answer or Open Response questions. Open Response questions require students to read a text and write a response to a prompt about the text, using evidence from the text to support their answers. Students at the Lincoln School scored above the state in grades 3-8 on Open Response. As students grow, they improve in their capacity to respond well to this type of question: the percentage of points correct on Open Response increased 16 points from the younger grades (grade 3: 58%) to the older grades (Grade 8: 74%). However, the percentage of points correct in these topics still needs to increase; improvement in responding to Open Response questions remains a goal at the school and in the district.

### **Mathematics** – (see detailed scores in Appendix A)

In mathematics at all grade levels, Lincoln School students score consistently higher than students across the state in percentage of scores at advanced and proficient levels. Overall since 2010, each grade level has made gains in combined scores and in CPI (Composite Performance Index).<sup>1</sup> Advanced scores at grades 3, 4, 5, 7 and 8 have increased since 2010. A comparison of grade 8 combined scores in 2013 to the same cohort scores in 2010 shows a 16 percentage point gain from 68% at fifth grade to 84% at eighth grade. Warning scores on the Lincoln campus have stayed low over the past four years; in 2013, these scores are 4% and below at all grades.

The cohort growth chart, (Appendix B) shows that each cohort varied in terms of growth over several years. Highlights include the following points about the gains in combined

---

<sup>1</sup> See multiyear scores on the DESE website, under school profiles, assessment results: [www.doe.mass.edu](http://www.doe.mass.edu)

percentage of advanced and proficient scores over several years of assessment, starting with grade five:

- Grade 5: 83% compared to 76% as 4<sup>th</sup> graders in 2012, characterized by a gain in percentage of advanced scores and drop in proficient scores.
- Grade 6: 76% compared to 72% as 4<sup>th</sup> graders in 2011, characterized by a slight increase in both advanced and proficient scores
- Grade 7: 83% compared to 60% as 4<sup>th</sup> graders in 2010, characterized by a gain in advanced scores, a drop in proficient scores, and reduction of scores at the needs improvement level.
- Grade 8: 84% compared to 45% as 4<sup>th</sup> graders in 2009, characterized by an increase in percentage of advanced and proficient scores, and a reduction of scores at the needs improvement and warning levels.

An analysis of mathematics performance on different types of questions shows some gain since 2010: the total number of points correct in 2013 for all questions is higher at each grade than it was in 2010. Students tended to receive more correct points on multiple choice questions than they did on Open Response and/or short answer questions. Yet in grades 3, 5, 7 and 8, points correct for short answer questions were at 84% or better, which is an improvement over points correct in previous years. Open Response scores at all grades continue to be higher than the state yet the total percentage of points correct ranges from 58% at grade 4 to 77% at grade 7. While the total advanced and proficient performance levels have risen steadily over the past five years, teachers and math specialists recognize that the Open Response questions still represent the most challenge for students and deserve continued attention in our mathematics instruction.

### **Science & Engineering** – (See detailed scores in Appendix A)

Overall, Lincoln School students achieved gains in performance in their science scores since 2009. This year fifth grade continued with the trend of improvement for the past five years. While eighth grade scores dipped somewhat this year, they are clearly still improved since 2009 and those scoring proficient or above (70%) is significantly higher than the state (39%).

The upward trend for 5th grade is clearly characterized by an increase in scores at the advanced level and a parallel drop in the scores at the needs improvement level. The 8th grade, however, showed a notable decrease in advanced level scores this year, a small increase at the proficient level but a larger increase in scores at the needs improvement level. Despite the general positive trend in scores of proficient level and above, looking at the historic data for 8th grade, and especially the 2013 results, raises a concern that is mirrored at the state level from grade 5 to grade 8: a decline in advanced level scores and an increase in proficient level scores. In almost all cases, the questions with the lowest percent of correct answers by Lincoln students at each grade level were also the ones with the lowest percent correct answers in the state data. As we analyze missed questions at grade 8, we may discover some information about why fewer 8th graders score at the advanced level and that may provide direction for refocusing some of our instruction.

As with ELA and mathematics, students perform better on multiple choice than on Open Response questions. For both 5th and 8th grades, approximately 30% of the questions are Open

Response and 70% multiple choice. Lincoln student's scores for Open Response in both 5th and 8th grade continue to be well above the state scores, but the district continues to focus on developing proficiency in responding to open-ended questions. This emphasis is particularly important as we incorporate the new national and state standards in reading and writing in science and engineering and await the state's decision on the adoption of the Next Generation Science Standards.

## **Hanscom Schools**

### **English language arts** – (see detailed scores in Appendix A)

Students in the Hanscom schools demonstrated a moderate performance in the ELA assessment. The Hanscom Middle School students' performance levels continue to be comparable to the state levels in grades 3-8. However at sixth grade, scores reached a new high level of 88% combined scores of proficient and advanced, which is 21 percentage points above the state. Analysis of a cohort's progress from one grade to the next does not result in valid measures at Hanscom Schools because of the high turnover rate. However, as part of the school's internal process, some data is gathered on specific aspects of performance for a small group of students who remain longer than two years.

The *Writing* strand is where results raise concern about student performance. The points scored in "Long Composition" were similar in grade 4 (60% points correct) to grade 7 (62% points correct). Scores show greater strength in "Production and Distribution of Writing" than in "Text Types and Purpose." Particular concern is raised when examining the low scores in "Text Types and Purpose;" 51% correct for grade 4; 51% correct for grade 7, which are both below the state averages. As is true in the district and across the state, Hanscom students perform better on multiple choice than on open-ended questions. Percentage correct scores on Open Response questions range from 45% to 69%. Students in grade 6 scored well above the state with 69% correct compared to 58% at the state level. The development of strength in answering Open Response and composing longer pieces of writing continues to be a priority at Hanscom and in the district.

### **Mathematics** – (see detailed scores in Appendix A)

In mathematics at grades 3-6, students in the Hanscom schools scored higher than students across the state in percentage of scores at advanced and proficient levels. However at grades 7 and 8, the combined advanced and proficient scores drop below 50%, and are under the percentage for state scores. There is a corresponding high level of scores in grades 7 and 8 at the needs improvement and warning levels. This is the same trend that has been apparent for several years, despite the efforts of math teachers and math specialists.

An analysis of mathematics performance on different types of questions shows that students in grades 3-8 earned more correct points on multiple choice questions than they did on Open Response and short answer questions, which is also true on the Lincoln campus and across the state. Students in earlier grades earned a higher percentage of correct points for Open Response, whereas students at grades 7 and 8 scored 59% and 47% points correct respectively.

These scores are below the state percentages for these two grades. Further investigation of the difficulties associated with open-ended questions is underway using the released questions for these items at each grade. Math specialists will be meeting with the principal and math teachers to study grade 7 and 8 scores, compare them to local math assessment data, and develop strategies to address the underlying skills that Hanscom students need to be successful.

### **Science & Engineering – (See detailed scores in Appendix A)**

The performance scores in science and engineering at Hanscom continue to show some improvement in grade 5 since 2009. The 2009 combined scores of advanced and proficient were 30%; the 2013 combined results for grade 5 are 59%. Over several years, the Hanscom grade 5 combined scores tend to be slightly higher than the state level of combined scores. In 2013, the eighth grade students reached a new high percentage of proficiency level scores: 51%, which is well above the state scores for proficiency of 39%. This is a welcome sign because in the past, grade 8 scores at Hanscom have tended to trend below the state level. This year's percentage of eighth grade proficient scores represents a 23 point gain over the 2012 results and was a factor in the school's accountability rating of Level 1 this year.

The high turnover rate at Hanscom is a major factor in the variability of science scores each year. Questions for the tests at grade 8 are based on state science and engineering standards in grades 6-8. Success depends on three years of participation in the district's science instruction. In fact, a small percentage of students attend Hanscom schools for three years and this presents a serious hurdle to students faced with a cumulative assessment. Each year, we look at the results of the few students who did attend for three years to see how well they fared. This year, 36 8<sup>th</sup> graders participated in the 2013 MCAS and only 7 students attended HMS in grade 6. Their test results were mixed: for student with disabilities, scores were low; others scored at the proficient level. The challenge of students who are unprepared for the state science tests continues to be of concern to the school and the district.

A close look at question type may assist science teachers in determining some areas for increased instructional focus. In both grades, students responded to multiple choice questions with greater accuracy than they were able to achieve in Open Response questions. Nearly 30% of the questions are Open Response in both 5<sup>th</sup> and 8<sup>th</sup> grade assessments. Fifth graders were more successful in responding to this type of open-ended question (58% correct) than were eighth graders (51%). Yet it is noteworthy that the eighth grade scores in this type of question represent a 17 point gain over scores for the same type of question in 2012. As a district, we will continue to focus on developing proficiency in responding to Open Response questions in the content areas.

## **Part II Progress and Performance Index (PPI)**

In 2012, the state of Massachusetts replaced the Adequate Yearly Progress (AYP) metric used since 2003 as the primary method of determining district and school "accountability" for student progress. The new method is called "Progress and Performance Index" (PPI). The PPI is assigned to districts, schools, and student groups based on their achievement and growth compared to targets set by the state. The indicator for achievement is the CPI (Composite Point Index) in ELA, mathematics and science; growth is indicated by the median SGP (Student

Growth Percentiles) in ELA and mathematics. For high schools, the PPI also includes two additional indicators: cohort graduation rate and annual dropout rate. Each year, districts and schools receive an annual PPI, based on a district or a school's progress toward targets from one year to the next, and a cumulative PPI based on four years of annual PPI data. More detailed information about the background for this change and the methods for calculating the PPI can be found on the Massachusetts website ([www.doe.mass.edu](http://www.doe.mass.edu)).

The PPI results in a classification of each school into levels from 1-5. A district is assigned the accountability and assistance level of its lowest performing school. For each level, the state has described the type of assistance that it will provide to help a district and its schools make progress in the learning of all students and, in particular, in the "High Needs" subgroup. For each level, schools and districts are required to take actions to: inform the community, analyze results for all student groups, develop specific plans for the learning of its students, and set aside resources.

When the PPI was first initiated in 2012, the majority of Massachusetts schools were classified into either Level 1 or Level 2 based on progress toward meeting their own PPI targets for all students and for students in the High Needs subgroup. The Lincoln district received a 2012 classification of "Level 2" because one school was designated as Level 2. For the 2013 accountability rating, the Lincoln Public Schools district's PPI results are the following:

Lincoln District:	Level 1
Lincoln School:	Level 1
Hanscom Primary:	Level 1
Hanscom Middle:	Level 1

More detailed reports for the district and the schools are in Appendix B and on line at [http://profiles.doe.mass.edu/state\\_report/accountability.aspx#](http://profiles.doe.mass.edu/state_report/accountability.aspx#). As a district, we will take the actions required by the state for Level 1 districts.

### **Part III Student Growth Percentile (SGP)**

2013 is the fourth year that the Department of Elementary and Secondary Education (DESE) has used a metric for assessing student growth in ELA and mathematics achievement called the Student Growth Percentile (SGP). This score reflects a student's progress over at least two years of MCAS testing relative to that of students across the state who are considered "academic peers." The rate of growth is expressed as a percentile score, which is calculated using the performance scores of other students who have a similar test score history. The growth percentile, which is separate from the MCAS achievement score, adds to an understanding of student performance. While the achievement score indicates how a student performed relative to grade level standards in a given year, the SGP provides a measure of how a student changed from one year to the next. The addition of a growth percentile to the information on MCAS testing of a student's achievement on standards defines academic performance as a combination of growth and achievement. More information about the state's rationale and formula for calculating the SGP is available at [www.doe.mass.edu/mcas/growth/](http://www.doe.mass.edu/mcas/growth/).

There are several advantages to having the SGP as a data point along with the MCAS achievement results:

- A student can achieve at a low level but still improve relative to his academic peers
- Another student could achieve well but not improve much from year to year
- Evidence of improvement is available even among those with low achievement
- High achieving students and schools have something to strive for beyond proficiency

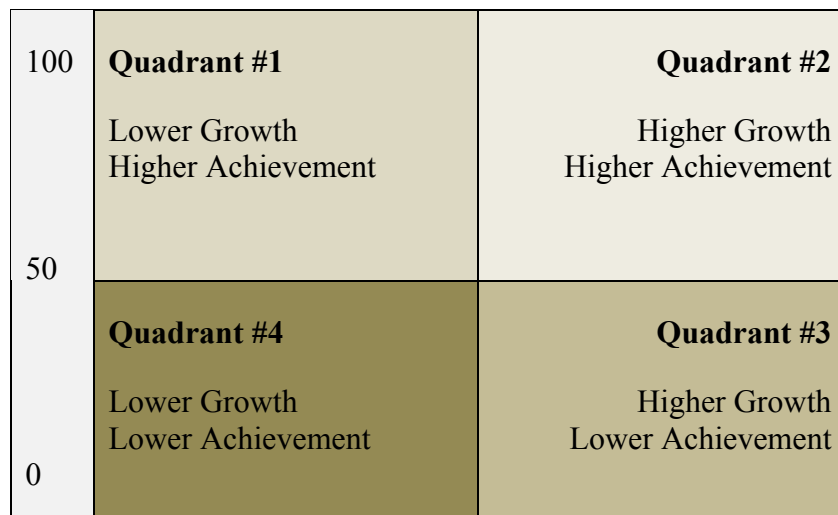
The use of SGP in the past four years has shown that these points are important to take into consideration as each school assesses the progress of its students.

Students in grades 4-8 who have taken the MCAS tests for at least two years have information about SGP in the MCAS results report sent home to families. The parent information chart includes achievement level and scores along with student growth percentiles for ELA and mathematics. The DESE offers three points of guidance in using SGP scores:

- Typical student growth percentiles are between about 40 and 60 on most tests.
- Students or groups outside this range have higher or lower than typical growth.
- Differences of fewer than 10 SGP points are likely not educationally meaningful.

### Student Growth Percentile Distribution

**% Proficient +**



The relationship between growth percentile and achievement can be understood in 4 quadrants, as depicted above. The student’s performance could be in Quadrant 1, reflecting low growth if he or she is already close to the top of the achievement scale (Advanced level scores of 260 to 280) and has an SGP below 40. Quadrant 2 is most desirable: high achievement scores and high SGP. Sometimes student performance falls in Quadrant 3 when a student who is not yet achieving at a Proficient level (240 or more) but has increased the achievement scaled score from

a lower level in the previous year of testing. Finally, students whose performance falls in Quadrant 4 are those who have low achievement scores and have made little growth.

In both middle schools, the SGP individual scores are far more useful than group scores. Principals have undertaken a close examination of the pattern of SGP scores for all students, with special attention to those students who did not achieve proficiency in their ELA and/or mathematics achievement results. Overall, the SGP percentiles for Lincoln School students in grades 5-8 in 2013 showed strong growth: 73% of students in English language arts and 74% in mathematics received student growth percentiles of 40 or higher, which indicates moderate to very high growth. See Appendix C for charts that show ELA and Math SGP score distributions for grades 5-8 in the Lincoln School and the Hanscom Middle School.

At Hanscom Middle School, principal and faculty have examined the achievement scores and growth percentiles for returning students at each grade who have been in Massachusetts for at least two years of state testing. While the results for actual achievement levels are not as high as desired, some of the growth results are encouraging. Overall, the SGP percentiles for Hanscom Middle School indicate that the majority of students in grades 5-8 in 2013 showed growth: 63% of students in English language arts and 57% in mathematics received student growth percentiles of 40 or higher. These growth scores are important indicators that the efforts teachers and students are making for the short time they are working together at Hanscom Middle School are producing some gains. The school faculty and principal are taking more action steps this year with the goal of increasing both growth and achievement for all students.

### **Next Steps**

Overall, the MCAS results for 2013 are very positive and indicate that our core curriculum is effective in advancing the learning of most of our students. Throughout this report, areas of concern have been highlighted and will be the focus of principals and of curriculum leaders in English language arts, mathematics, and science and engineering. They will continue to work on analyzing some of the released test items in the Open Response questions to gain insight into what our students find difficult and how those difficulties might be addressed.

In the second report about student achievement, when achievement gaps will be discussed in light of subgroup performance in MCAS and local district assessments, a more detailed explanation of action steps in the schools will be presented.



## 2013 MCAS Results: Appendices

### Appendix A: Performance

- 2013 Performance Levels: State, District, Schools by Grade in ELA, Math, Science/Engineering
- 2010-2013 Cohort Comparisons at Lincoln School by Grade in ELA, Math, Science/Engineering

### Appendix B: Accountability

- 2013 Accountability Data : Lincoln District, Lincoln School, Hanscom Middle, Hanscom Primary

### Appendix C: Growth

- Spring 2013 MCAS School Achievement and Growth (SGP): ELA and mathematics scores by grade level: 5-8 Lincoln School, Hanscom Middle School
- Spring 2013 SGP "Scatter Plot" for ELA and mathematics grade 8, Lincoln School and Hanscom Middle School

### Appendix D: Comparison to Surrounding Communities

- 2013 MCAS Proficient + Advanced; CPI, and SGP for Lincoln School and Six Surrounding Communities