

MCAS 2.0 and MCAS

Accountability

December 12th, 2017

—

Presentation Overview

I. Testing Transition: Legacy MCAS and MCAS 2.0 compared

II. How we use results to improve instruction: MCAS 2.0 grades 3-8 ELA and math

III. Science MCAS: Transition to Next Generation

IV. Accountability: Level 2 Analysis and Response

V. Future Outlook

VI. Contributors--thank you

Transition Path: Legacy MCAS to MCAS 2.0

Grades 3-8 ELA and Math

Pre-2013: Legacy MCAS: Need for transition to new assessment aligned to new Massachusetts frameworks (Common Core) in ELA and math (released 2010-11; revised 2017); also transition to computer-based testing

2013-2014: Bedford participated in a small pilot of PARCC at Lane and JGMS.

2014-2015: Statewide pilot of PARCC Bedford participated grades 3-8, computer-based at JGMS, paper-based at Lane (some districts stayed with MCAS); timed (legacy MCAS was not timed)

2015-2016: Statewide pilot of PARCC Bedford participated grades 3-8 (all paper-based); timed

2016-2017: Next Generation MCAS (2.0) administered for everyone grades 3-8 (computer-based at grades 4 and 8 required). **Test will serve as baseline** against which future progress is measured.

How does MCAS 2.0 differ from Legacy MCAS?

Legacy MCAS

- ❑ Aligned to earlier Massachusetts ELA and math frameworks upon which common core was based.
- ❑ Tasks-questions were less complex, less reliant upon higher order thinking, multi-step problem solving and comprehending complex readings.
- ❑ Students needed to know the mechanics-skills of standards in math.
- ❑ MCAS ELA tended to flatten out rather than advance in its expectations

MCAS 2.0

- ❑ Aligned to 2011 frameworks: more complex topics in earlier grades and advances further for college-career readiness in ELA and math.
- ❑ Tasks are multi-step, more complex, need to identify all correct answers. Two-part questions require identifying evidence for inference; both parts need to be correct to earn credit.
- ❑ Focuses on students' critical thinking abilities, application of knowledge, and ability to make connections between reading and writing.

ELA Legacy MCAS compared to MCAS 2.0

Legacy MCAS Grade 10 Essay Question

“Often in works of literature, a character learns an important lesson. From a work of literature you have read in or out of school, select a character who learns a lesson about one of the ideas listed below.

- compassion
- forgiveness
- perseverance
- truth

In a well-developed composition, identify the character, describe how he or she learns the lesson, and explain how the lesson is important to the work as a whole.”

MCAS 2.0 Grade 7 Essay Question

“Based on 'Steerage' and 'Voyage of Hope, Voyage of Tears,' write an essay that explains how the lives of immigrants are portrayed. Be sure to use information from both the poem and the article to develop your essay.”

<http://www.doe.mass.edu/mcas/2017/release/Gr7-ELA.pdf>

Both the article and the poem are also accompanied by multiple choice questions.

MCAS 2.0: Math Grades 3 and 4

Grade 3: (Use of distributive property) and attending to precision.

"Laroy wrote the number sentence shown: $8 \times (3 + 2) = ?$

Which of these show another way to solve Laroy's number sentence?

A. $(8 \times 3) + 2 = ?$

B. $(8 \times 3) \times (8 \times 2) = ?$

C. $((8 \times 3) + (8 \times 2)) = ?$

D. $(8 + 3) \times (8 + 2) = ?$

Grade 4: Mr. Felton will use exactly 42 feet of fencing to surround a garden that is in the shape of a rectangle. His garden has a length of 12 feet. The equation below represents the perimeter of Mr. Felton's garden.

$$w + w + 12 + 12 = 42$$

What is w , the width, in feet of Mr. Felton's garden?

Enter your answer in the box: (there is an answer box) with the label of "feet"

Math Grade 5

Grade 5: At a cafe, the cost of a turkey sandwich is \$1 less than twice the cost of a side salad. A side salad costs \$3.50. Which of the following expressions can be used to find the cost, in dollars, of a turkey sandwich at the cafe?

- A. $3.50 \times 2 - 1$
- B. $3.50 \times 2 + 1$
- C. $(3.50 - 1) \times 2$
- D. $(3.50 + 1) \times 2$

In the newer standards there is an increased emphasis on writing equations and expressions in all grades 3-5. There is also more reading involved in many problems.

Digital Enhanced Interface: Constructed Response

One of the biggest differences is the "Digital Enhanced" interface that the students encounter when doing the test online. It is really tricky for them and it is imperative that we figure out ways to help students practice. The part that is trickiest for students is using what is called the "Equation Editor", and nowhere can students practice with this interface except on MCAS practice questions that were published last year.

- Students were trained on this interface at Lane and JGMS.
- The equation editor functions differently on desktop and iPad, especially with negative numbers.
- The next three slides set out a three-part 5th grade problem using the equation editor.

Math Grade 5

Constructed Response and Equation Editor

There are 720 students at a school. All the students at the school are going on a field trip to a science museum. The students will ride school buses to the museum. Each bus holds 60 students when completely full.

Part A

What is the least number of buses needed to take **all** the students from the school to the science museum? Show or explain how you got your answer.

Enter your answer and your work or explanation in the space provided.



▼ Math symbols

| | | | |
|---------------------------|---------------------------|-----|-----|
| + | - | × | ÷ |
| $\frac{\square}{\square}$ | $\frac{\square}{\square}$ | () | [] |
| = | < | > | ≠ |
| \$ | ° | ? | |

Math Grade 5

Constructed Response and Equation Editor

Part B

Write an equation to represent the problem you solved in Part A.

Enter your equation in the space provided. Enter **only** your equation.

| | | | | | | |
|---|---|---|---|--|---|---|
|  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |
|  | | | | | | |

Math Grade 5

Constructed Response and Equation Editor

Part C

The school can also use smaller buses to take the students to the museum. Each smaller bus holds 50 students when completely full.

What is the least number of smaller buses needed to take **all** the students from the school to the science museum? Show or explain how you got your answer.

Enter your answer and your work or explanation in the space provided.



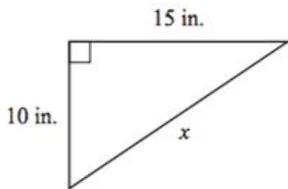
▼ Math symbols

| | | | |
|---------------------------|---------------------------|-----|-----|
| + | - | × | ÷ |
| $\frac{\square}{\square}$ | $\frac{\square}{\square}$ | (.) | [.] |
| = | < | > | ≠ |
| \$ | ° | ? | |

Math Legacy MCAS compared to MCAS 2.0

Legacy MCAS Pythagorean: Grade 8

- 18 A right triangle and some of its measurements are shown below.

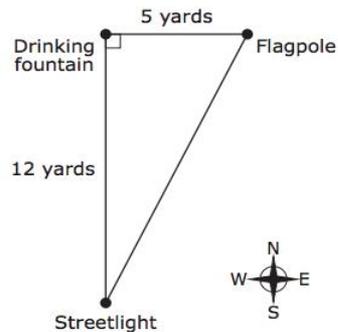


What is x , the length to the nearest inch of the third side of the triangle?

MCAS 2.0 Pythagorean: Grade 8

Mathematics

- 4 In a park, the locations of a drinking fountain, a streetlight, and a flagpole form a right triangle. The drinking fountain is 12 yards north of the streetlight, and the flagpole is 5 yards east of the drinking fountain, as shown in this diagram.



What is the shortest distance from the streetlight to the flagpole?

- A. 7 yards
- B. 11 yards
- C. 13 yards
- D. 17 yards

Math Legacy MCAS compared to MCAS 2.0

Legacy MCAS Irrational Number: Grade 8

3 Which of the following numbers is irrational?

A. -5

B. $\frac{2}{3}$

C. $\sqrt{7}$

D. $\sqrt{9}$

MCAS 2.0 Irrational Number: Grade 8

Mathematics

5 Which of the following is an irrational number?

A. $7.\overline{1234}$

B. 7.9253481

C. $\frac{2}{\sqrt{9}}$

D. $\frac{\sqrt{2}}{9}$

MCAS Achievement Levels

★ Legacy

Advanced

Students at this level demonstrate a comprehensive and in-depth understanding of rigorous subject matter, and provide sophisticated solutions to complex problems.

Proficient

Students at this level demonstrate a solid understanding of challenging subject matter and solve a wide variety of problems.

Needs Improvement

Students at this level demonstrate a partial understanding of subject matter and solve some simple problems.

Warning

Students at this level demonstrate a minimal understanding of subject matter and do not solve simple problems.

★ Next-Generation

Exceeding Expectations

A student who performed at this level exceeded grade-level expectations by demonstrating mastery of the subject matter.

Meeting Expectations

A student who performed at this level met grade-level expectations and is academically on track to succeed in the current grade in this subject.

Partially Meeting Expectations

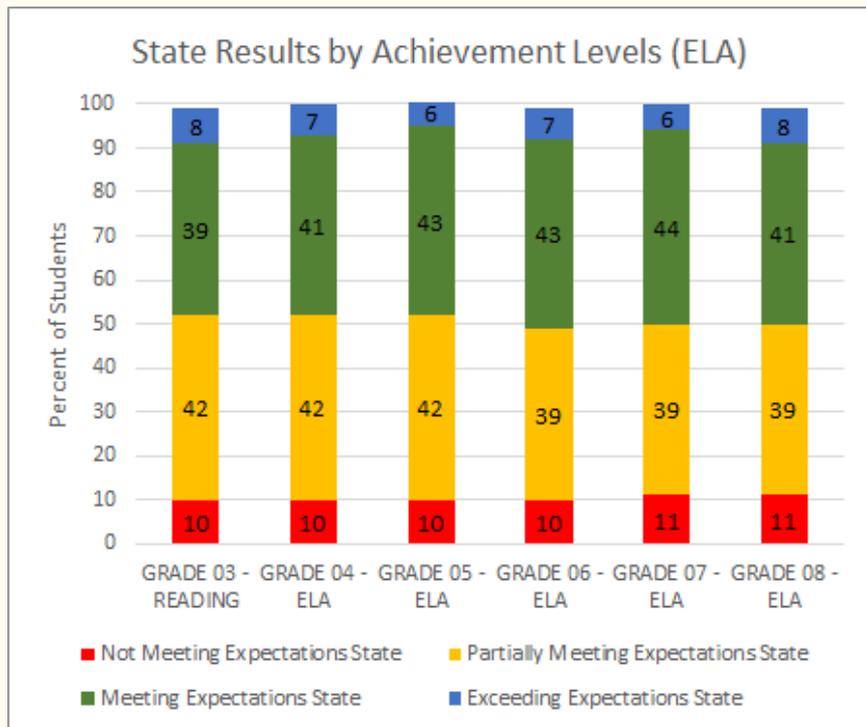
A student who performed at this level partially met grade-level expectations in this subject. The school, in consultation with the student's parent/guardian, should consider whether the student needs additional academic assistance to succeed in this subject.

Not Meeting Expectations

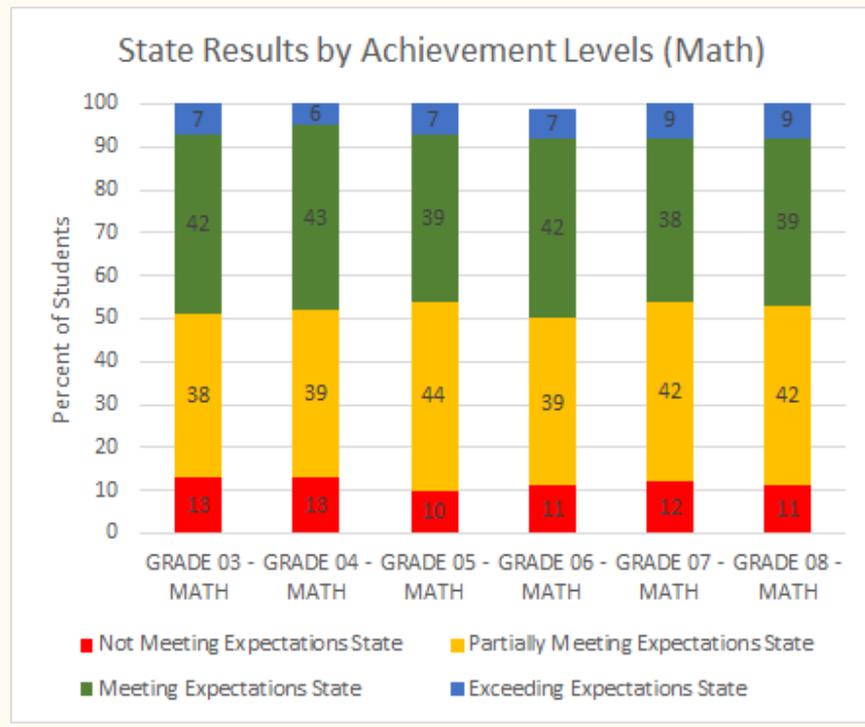
A student who performed at this level did not meet grade-level expectations in this subject. The school, in consultation with the student's parent/guardian, should determine the coordinated academic assistance and/or additional instruction the student needs to succeed in this subject.

Statewide 2017 Results for Grades 3-8 ELA and Math: Percent of students in each achievement level

ELA



Mathematics



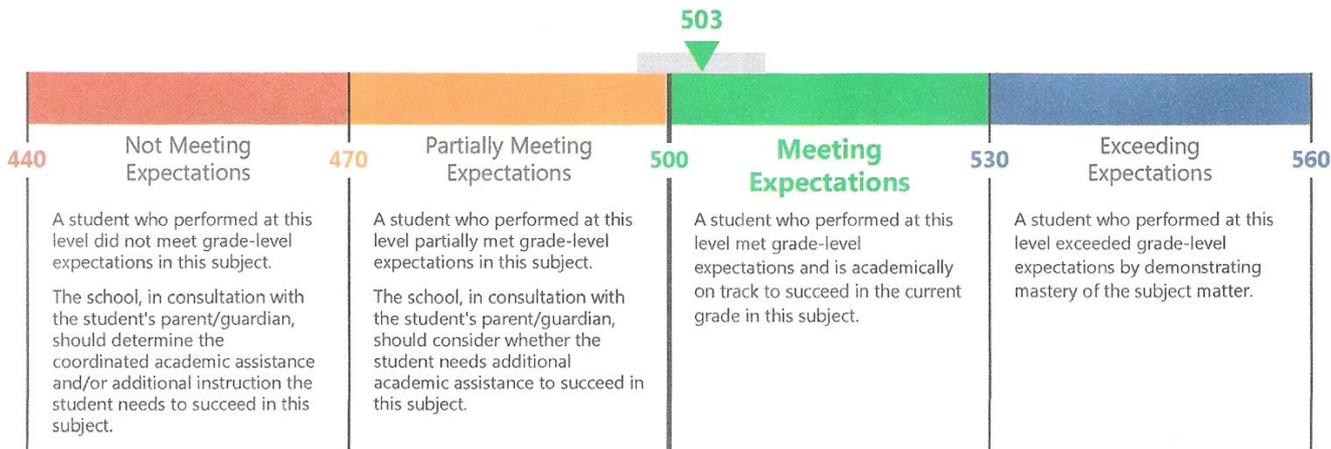
Name:
SASID:

English Language Arts Results

Paper-based test

Your Child's Achievement Level: **Meeting Expectations**

Your Child's Score: **503**



In the figure above, the triangle indicates your child's score on the test. The gray bar shows the range of likely scores your child would receive if he or she took the test multiple times.

How your child performed compared to the school, district, and state

| Your Child's Score | Average Score | | |
|--------------------|---------------|------------|-------|
| | School | District | State |
| 503 | 503 | 499 | |

MCAS 2.0 Parent Score Report

How your child performed on the test in each reporting category and on each individual test question

| Reporting Category | Points earned by your child | Average number of points earned by Meeting Expectations students who scored close to 500 |
|--------------------|-----------------------------|--|
| Reading | 19 out of 20 | 16.6 out of 20 |
| Writing | 6 out of 11 | 5.5 out of 11 |
| Language | 8 out of 15 | 9.9 out of 15 |

Individual Test Questions

| Question Number | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | | | | |
|-----------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|--|--|--|--|
| Points Earned | 1/1 | 1/1 | 1/1 | 1/1 | 1/1 | 1/1 | 2/7 | 2/2 | 2/2 | 1/2 | 0/2 | 5/6 | 1/1 | 1/1 | 1/1 | 1/1 | 1/1 | 1/1 | 1/1 | 1/1 | 1/1 | 1/1 | 1/1 | 0/1 | 4/7 | | | | |

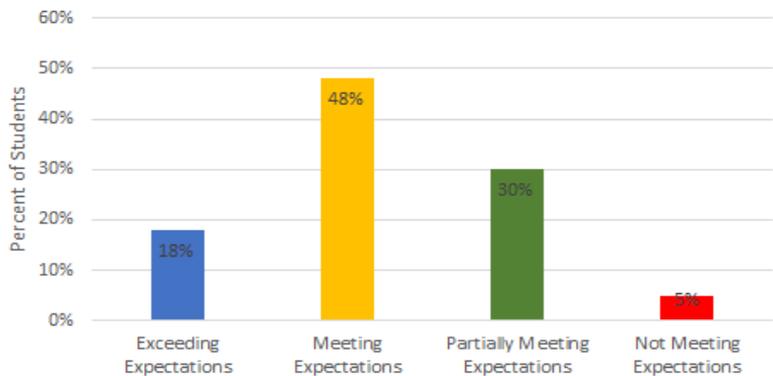
Key

x/y = x points earned out of y points possible

Blank space = no answer

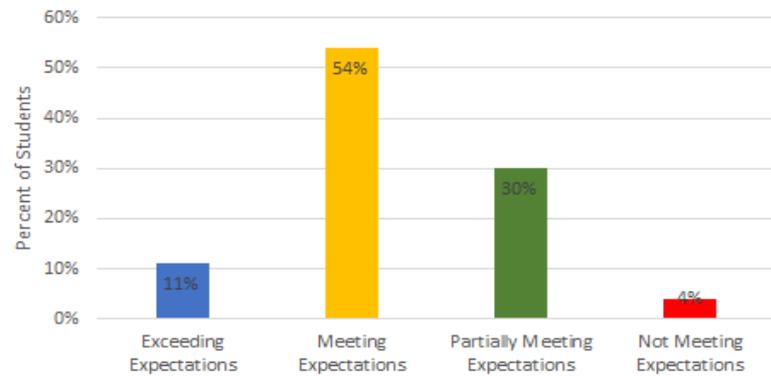
Go online to see a description of every test question at www.doe.mass.edu/mcas/parents.

MCAS 2.0 3-8th Math

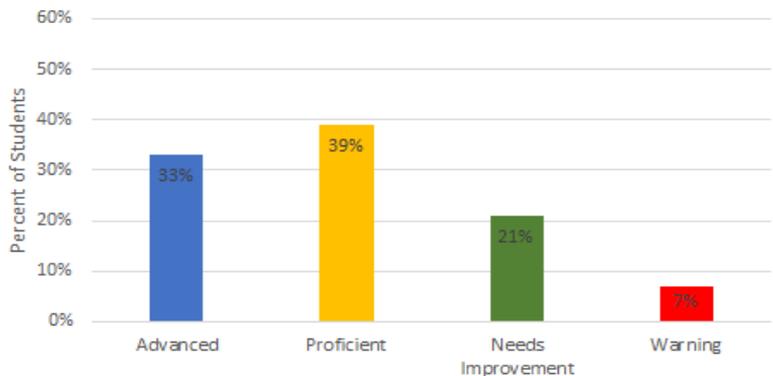


MCAS 2.0

MCAS 2.0 3-8th ELA

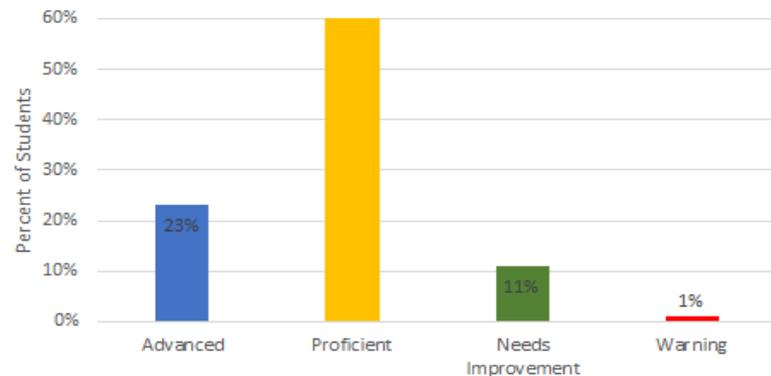


Legacy MCAS 3-8th Math



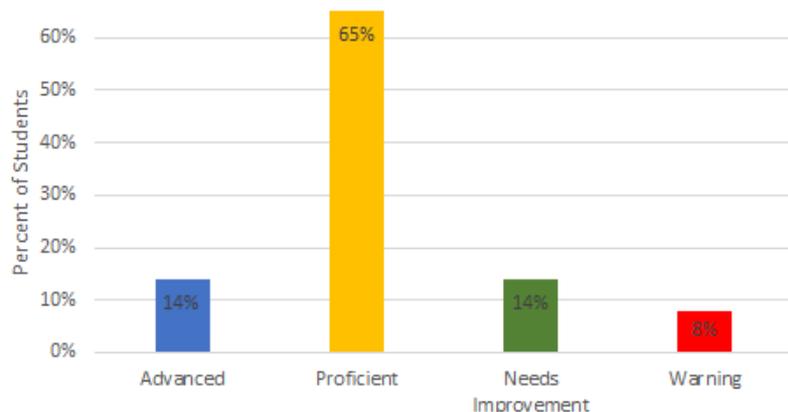
MCAS

Legacy MCAS 3-8th ELA

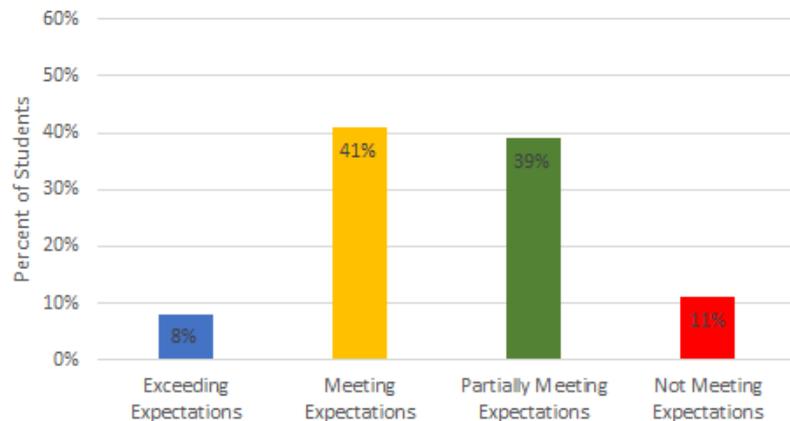


Math 3-8

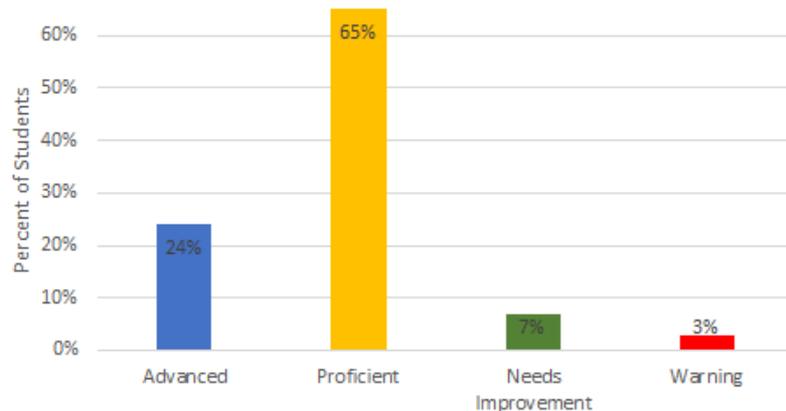
Legacy MCAS 8th Grade ELA State Achievement



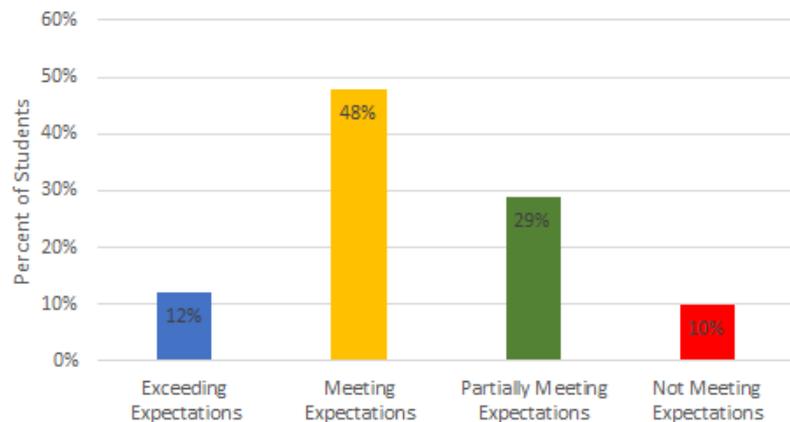
MCAS 2.0 8th Grade ELA State Achievement



Legacy MCAS 8th Grade ELA JGMS Achievement



MCAS 2.0 8th Grade ELA JGMS Achievement



General Conclusions: ELA

We had adopted and aligned to the 2011 ELA Frameworks, especially in the areas of close reading and analysis, including written analysis.

Because our instruction and student results were strong as reflected by MCAS and other assessments--especially at grade 10 where we consistently had 100% pass rate--we concluded that we would be better-prepared than most for the Next Generation testing and overall student preparedness for college and career.

What we have realized in studying results of this year (and very limited data from the PARCC years), is that we have lacked sufficient comprehensive instruction around multiple and complex texts, particularly in non-fiction, that would prepare students to handle such tasks independently. Coordination of non-fiction teaching in English, Science and Social Studies is well underway to address this concern, particularly at JGMS.

General Conclusions: Math

We had adopted and aligned to the 2011 math frameworks, which required significant changes in curriculum at the elementary level. In general, topics were introduced earlier and advanced further.

The math results at Lane remained relatively strong with MCAS, and were consistently stronger than ELA results.

The MCAS 2.0 era holds real promise for our students: they need to know the mechanics/skills of the standards and also be able to apply, interpret and explain them. Legacy MCAS did the former and MCAS 2.0 does both. Layering in opportunities for student to do the higher order aspects is the focus of math department work with rich tasks. The emphasis is on the math practices K-12.

How will we use results to improve instruction?

1. How are we doing? Where are we doing well? How well do our common assessment data match up with MCAS results?
2. What are successes we can build on? What in our practice is contributing to those successes?
3. Who isn't making sufficient progress? What strategies and interventions have been used? What in our practice could be contributing to lack of progress?
4. What are general areas of strength as reflected by the assessment? What are the strengths in instruction contributing to that success?
5. Where are the general or specific areas of weakness across a given grade level? How can we strengthen our instruction in these areas?

ELA Conclusions for grades 3-5

Steps taken

1. Professional development at Lane in 2017-2018 is focused primarily on refining the teaching of reading: Using Fountas & Pinnell benchmark assessments to inform instruction.
2. Teachers are working under guidance of Andrea Salipante to fit small group reading instruction to the needs of each learner.
3. Leveled Literacy Intervention (LLI) used successfully K-2 is being introduced at grade 3.
4. Title I early morning literacy at grade 3 is in place for its third year (serves 12-15 students).

Observations

- In grade 3, SWD (Students with Disabilities) struggled more with ELA than with math.
- Student growth in ELA at grade 4 was not as strong as math in same subgroups.
- The exception was grade 5 ELA, where all SGPs (Students Growth Percentiles) were above 55 (even high needs) except SWD (32).

Percentage of All Students M/E* expectations

- Grade 3: 65%
- Grade 4: 66%
- Grade 5: 68%

* Meets or Exceeds expectations

Math Conclusions for grades 3-5

Steps taken

1. Sarah Dorer analyzes performance in each standard, presents data and recommends adjustment in instruction.
 - a. In grade 5, students performed better on topics recently taught, so teachers will build in more frequent review of earlier topics.
 - b. In grade 4, test showed that two-digit multiplication needs to be more solid.
 - c. Grade 3 strongest when students were given visual representation rather than asked to work with abstract ideas--largely developmental.

Observations

- ❑ In grades 4 and 5 where student growth is calculated, SGP was 50 or above in nearly every subgroup except SWD; high needs SGP was 48 (grade 4) and 49.5 (grade 5)

Percentage of All Students M/E expectations

- ❑ Grade 3: 69%
- ❑ Grade 4: 74%
- ❑ Grade 5: 69%

ELA Conclusions for grades 6-8

Steps taken

1. Department meets to analyze items-performance-areas for improvement--already clear that analytic and expository writing in response to multiple texts are areas of need.
2. Develop clearer vertical alignment to address what is identified in data.
3. Adjust-revise common assessments and supporting instruction according to results.
4. This will be ongoing work throughout and beyond the 17-18 school year.
5. Teachers have aligned goals to areas of concern, such as grade 6 student learning goal: By June 2018, students will be able to articulate different points of view on an issue.

Observations

- ❑ Male-female performance gap is a concern:
 - ❑ Grade 6 Male M/E: 63%
Female M/E 81%
 - ❑ Grade 8 Male M/E 49%
Female M/E

Percentage of All Students M/E expectations

- ❑ Grade 6: 72%
- ❑ Grade 7: 59%
- ❑ Grade 8: 61%

Math Conclusions for grades 6-8

Steps taken

1. Math department members are doing intensive and detailed alignment work with the 2017 standards to be sure they are on track at every grade and level.
2. They will adjust instruction and pacing guides accordingly.
3. Department will ensure teaching to the standards reflected on MCAS 2.0 as a minimum expectation; many students will go beyond this minimum.
4. Department will follow guidelines for sound lessons and authentic literacy laid out in November 2017 math update for school committee, including a focus on the math practices.

Observations

- ❑ SGP's in grade 7 are above 50 in every reported subgroup.
- ❑ SGP's in grade 8 are above 50 in every subgroup except SWD (46); high needs is 51.5

Percentage of All Students M/E expectations

- ❑ Grade 6: 68%
- ❑ Grade 7: 64%
- ❑ Grade 8: 58%

Science: Transition to Next Generation

Science Department 6-12 began the transition to Next Generation Science standards in 2014.

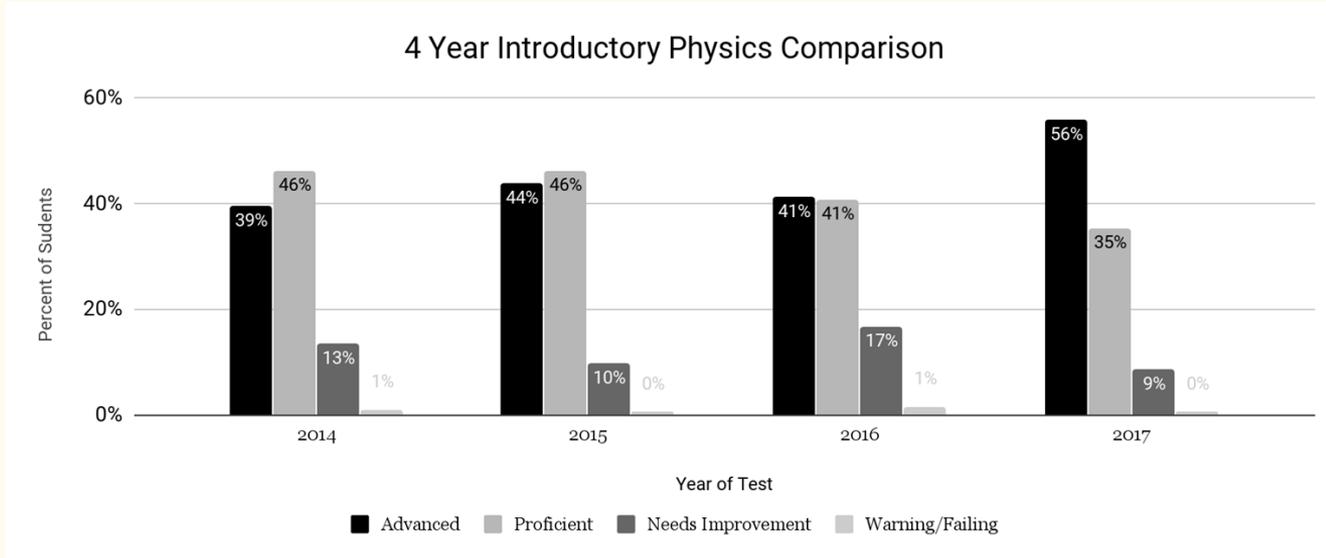
Science K-5 began transition to Next Generation in 2015; at Lane the commitment was to move to them in full during the 2015-2016 school year.

The MCAS test, on the other hand, was based on the 2006 STE (Science, Technology, Engineering) frameworks grounded in factual recall rather than the scientific process. We expected this lag in the updating of the test to new standards to cause a drop in scores.

Beginning in 2018, the test will align more closely with the current frameworks:

- 2017 Test - based on 2006 STE Frameworks
- 2018 Test - Mix of 2006 STE Frameworks and 2017 Crossover STE Frameworks
- 2019 Test - Based on 2017 STE Frameworks

Legacy MCAS: Grade 9 (Class of 2020)



Legacy MCAS Science: Grade 9 (Class of 2020)

Changes implemented during the 2016-2017 school year:

1. Increase in the applications of concepts in lab settings
2. Students self-reflection on Science & Engineering Practices
3. Mid-Year focus on identifying students needing support
 - a. Teachers focused special help for students
 - b. Referred to AAC when appropriate
4. Moving Physics Final Exam
 - a. Students took exam prior to the MCAS testing date
 - b. Focused review for preparing students based on final results
 - c. Identified specific student needs for review and reteaching
 - d. Reduced stress during Finals week for Freshman
5. Student course selection collaboration between Grade 8 and Physics teachers to identify the level for course enrollment.

Subgroup Performance also Improved

Progress from 2016 to 2017 in % of students proficient or higher:

Economically disadvantaged: 60% to 88%

Student with Disabilities: 55% to 62%

High Needs: 57% to 74%

These grade 9 scores were NOT the scores used in our accountability calculations, as those calculation are based on tenth grade students (primarily 2016 physics results)

Grade 8 Science-Technology/ Engineering

When questions align to new standards, our students' performance is strong:

2017, Science and Technology/Engineering - Grade 8

Reporting Category: Technology/Engineering

Question 7: Multiple Choice

Standard: 5.3 - Explain how the forces of tension, compression, torsion, bending, and shear affect the performances of

JGMS 69% Statewide 44%

2017, Science and Technology/Engineering - Grade 8

Reporting Category: Life Science

Question 15: Multiple Choice

Standard: 8 - Recognize that hereditary information is contained in genes located in the chromosomes of each cell. A human

JGMS 81% Statewide 70%

es.

2017, Science and Technology/Engineering - Grade 8

Question 1: Multiple-Choice

Reporting Category: Technology/Engineering

Standard: 2.1 - Identify and explain the steps of the engineering design process, i.e., identify the need or problem, research the problem, develop possible solutions, select the best possible solution(s), construct a prototype, test and evaluate, communicate

JGMS 90% Statewide 82%

BHS Accountability: Level 2

- ❑ 2017 was the last year of NCLB (No Child Left Behind) yearly progress targets for all students and sub-groups.
- ❑ This is the first time we have slipped to level 2 at the high school--overall we have met annual targets for growth and achievement, including in subgroups, up until 2017.
- ❑ While BHS tenth grade students met or exceeded all targets in ELA, we fell short in math and science, thus leading to level 2 designation. Science at all grades is teaching the Next Generation Frameworks; the 2017 test is based on the 2006 Frameworks.
- ❑ We have done individual analysis and integrated necessary supports for those students in the NI or Failing categories. We are examining the “educational story” of these students to identify any structural or instructional changes we need to make.
- ❑ ELA and math are adjusting rigor and instruction to prepare for MCAS 2.0 in 2019; disciplinary literacy implementation supports that work.
- ❑ BHS is moving in the direction of close collaboration among faculty so that all students meet these standards. For example, a special education teacher is working with Algebra and Geometry teachers on open-response problems based on the standards.
- ❑ [2017 Accountability Report](#)

Future Outlook for Next Generation I

- ❑ MCAS 2.0 more closely aligns with district priorities of higher level thinking and problem-solving.
- ❑ Because the MCAS 2.0 assesses essential academic skills, it will become a more important measure of our students' achievement and growth than the Legacy MCAS.
- ❑ The more challenging nature of the tests will support our work helping all students reach these standards.
- ❑ Now that we have our 2017 baseline for ELA and math grades 3-8, we will be able more accurately to monitor and improve student growth and achievement. The baseline tests for grade 10 will be in 2019.

Future Outlook for Next Generation II

- ❑ The particular skills MCAS 2.0 measures do **not** include all the skills we value: creative expression, oral argument, logic models, and civic involvement to name only a few.
- ❑ Beyond academic goals, we are also very committed to students' social and emotional growth and development, an important part of our curriculum.
- ❑ This new testing, while it measures only some aspects of our curriculum, is part of a coherent assessment program that will help us to measure readiness for the next grade, and eventually college and career.
- ❑ A testing transition is necessarily a bumpy road, which is all the more reason we give close attention to our own common assessments to make sure they measure these complex skills adequately and authentically. That will continue to be a priority in our district.

Special Thanks to Contributors

BHS: Principal Heather Galante; Program Administrators Patrick Morrissey, Liz Marcotte, and Michael Griffin; Academic Achievement Director Lisa Morrison

JGMS: Principal Kevin Tracey and Assistant Principal Matt Mehler

Lane: Principal Rob Ackerman, Assistant Principal and Science Coordinator Keith Kinney, Math Coordinator Sarah Dorer

ELA K-5 Curriculum and K-12 Reading Director Andrea Salipante

Special Education Director Marianne Vines

Superintendent Jon Sills