

Burlington K-5 students have been using ST MATH for many years as a supplement to our math curriculum. We continue to evaluate its effectiveness in students transferring mathematical knowledge towards the grade-level standards. We sent our MCAS scores to Mind Research to analyze the impact of ST MATH on the MCAS math assessment. This impact study models a student's ST MATH use and the growth between a student's scaled score on MCAS from Spring 2023 to Spring 2024. It estimates the number of added scaled score points **ADDED** to the MCAS if 100% progress in ST MATH.

Good news!

The study concluded that a Burlington student with 100% progress on ST MATH would average an expected gain of **+9.1 MCAS Math Scaled Score** points.

So what does that mean?

The MCAS scaled score ranges from 440-560 points. Theoretically, if a student completed 100% ST MATH progress they could move from 463 (Not Meeting Expectations) to 472.1 (Partially Meeting Expectations) or 492 (Partially Meeting) to 501.1 (Meeting Expectations).

Read about the full study below from ST MATH Mind Research Institute:

ST Math usage vs. MCAS Scores in Burlington, MA

Wondering how spending more time with ST MATH might impact your students on high stakes tests?

We did the math....

ST MATH is a PreK -8 visual instructional program that leverages the brain's innate spatial-temporal reasoning ability to solve mathematical problems. Its unique, patented approach provides students with equitable access to learning through challenging puzzles, non-routine problem solving, and informative feedback. With ST MATH, students build deep conceptual understanding, and schools see proven, repeatable results.

As students work through the visual, spatial-temporal games and receive informative feedback, they master grade-level math concepts at their own pace, and the more grade-level standards they master, the greater their advantage on state assessments. Research studies across the country prove that ST MATH drives more learning.

How much did ST MATH increase my students' scores?

We joined ST MATH usage data with MCAS scaled scores for 519 students at Burlington, MA in Grade 4 and 5 (2024) at 4 schools. We mathematically modeled how student MCAS score growth from spring 2023 to spring 2024 changed based on observed differences in ST MATH usage (i.e. was more content completed, or less, all else being equal).

Impact results

100% Progress of ST MATH

Burlington averaged an expected gain of +9.1 MCAS Math Scaled Score Points.

How it's Calculated

To determine this gain for the students, MIND Research Institute, the creators of ST MATH, generate a linear model fitting the relationship among four key variables, using your actual student data for ST MATH usage and scale scores.

Model

The model takes into account:

- MCAS Scores
- Student's prior math knowledge
- Schools and/or teachers
- ST MATH Progress

Student Prior Math Knowledge

The model considers previous math knowledge (based on MCAS) from one year to another (growth). Often, the higher the previous score, the harder it is to grow the next year.

ST MATH Progress

Student prior math content knowledge can affect their year-end ST MATH progress. Students work at their own pace as they master ST MATH puzzles, so those students with higher levels of existing math content knowledge will master the puzzles more quickly while other students may need to replay games a few more times to achieve mastery. Because they move through the ST MATH content faster, students with higher prior math content knowledge are often overrepresented at the highest amounts of ST MATH progress.

Schools and/or Teachers

Teachers or schools with potential growth clusters are also factored in.

The model takes into account all of these factors to determine the relationship between ST MATH progress and the added scaled score progress.

If you have any questions about this study or ST MATH please contact Carrie Fortunato @ Fortunato@bpsk12.org or 781-238-6843.