

# Heart Math Tutoring

## Program Evaluation

May 2017

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# EXECUTIVE SUMMARY

## Overview

The present study examined student performance in Charlotte-Mecklenburg Schools (CMS) following participation in the Heart Math Tutoring program. Founded in 2010, and establishing independent 501(c)3 status in 2014, Heart presently provides tutoring services to over 650 students in grades 1-5 across 12 CMS schools. Utilizing volunteers to provide individual 30-minute tutoring sessions, twice per week, to students struggling in math, Heart's mission is to *ensure that all elementary students develop the strong foundation in math and enthusiasm for academics needed for long-term success, by helping schools use volunteers as tutors.*

In order to support Heart in evaluating its students' outcomes and to improve its programming, this study examined academic and behavioral outcomes of students served by Heart in the 2014-2015 and 2015-2016 school years. The study addressed how Heart student absences, suspensions, and math and reading performance on End-of-Grade (EOG) and Measures of Academic Performance (MAP) assessments compared to outcomes for peers at their schools and across the district. In addition, a comparison sample was created that was matched on demographic characteristics and drawn from the schools attended by Heart students in order to examine the outcomes of a quasi-experimental control group of similar students who did not receive Heart tutoring.

## Findings

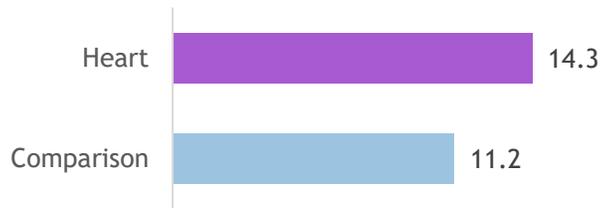
Key findings regarding Heart student outcomes were as follows:

1. Students served by Heart generally demonstrated improved performance on their math EOG exams, but not reading EOGs, the year they were served by Heart;
2. Improved performance on math EOGs was maintained if a student continued to participate in Heart beyond one year, but returned to pre-Heart levels if their participation ended;
3. Across grade levels and school sites, Heart students demonstrated greater improvement relative to comparison peers on MAP assessments in math while being served by Heart. As with EOGs, gains were diminished the year after participation ended.
4. Heart internal data appeared to be associated with CMS standardized test measures. Most especially, students who demonstrated growth and mastery on Heart internal assessment areas tended to achieve higher scores on their math EOG.

Examining the outcomes of all students served by Heart in 2015-2016, Heart students generally demonstrated poorer performance on math and reading EOG exams than the sample of matched comparison peers and other students in their schools. In math, 38% of Heart students achieved proficiency compared to 47% of the comparison group, while in reading, 22% of Heart students achieved proficiency, as compared to 34% of the comparison group.

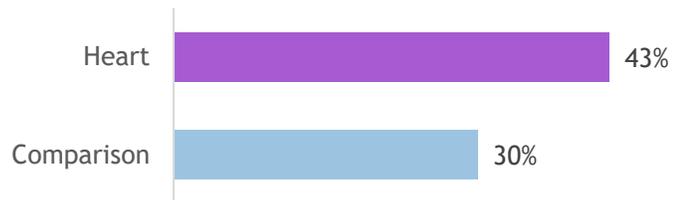
However, although their proficiency rates were lower than that of their peers, Heart students generally demonstrated greater growth, as measured by MAP assessments, from the fall to the spring of the 2015-2016 school year. Heart students averaged 14.3 points of growth, compared to 11.2 points of growth in the comparison sample, which was a statistically significant difference.

Heart students showed greater growth than comparison peers on MAP assessments from fall to spring 2015-2016



In addition, Heart students who received tutoring for the first time in 2015-2016 were more likely to improve upon their 2014-2015 math EOG scores as compared to comparison peers. While 43% of Heart students improved their EOG scores from 2014-2015 to 2015-2016, only 30% of comparison students did so. Such differences were not observed on the reading EOGs, where 22% of Heart students and 24% of comparison students improved their performance from 2014-2015.

A greater percentage of Heart students improved their math EOG achievement level from pre- to post-tutoring than did comparison peers



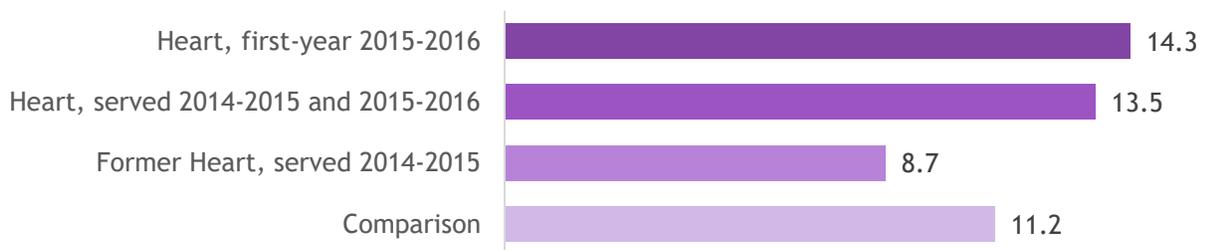
Moreover, while comparison students significantly outperformed Heart students on the 2014-2015 math EOGs (i.e., before students received tutoring), there was no significant difference between groups on the 2015-2016 EOGs (i.e., after students received tutoring).

Therefore, although their overall rates of proficiency still tended to be slightly lower than their peers' rates, students being served by Heart generally demonstrated greater gains in their math achievement the year that they received tutoring services.

Students who were served in 2014-2015 but not 2015-2016 - former Heart students - tended to show similar trends while being served as did students who were served for the first time in 2015-2016. That is, in 2014-2015, students being served by Heart tended to improve their math EOG performance, but not their reading EOG performance, as compared to the 2013-2014 school year (MAP data was not available before 2015-2016). Heart student growth in achievement scores from 2013-2014 to 2014-2015 was statistically significant.

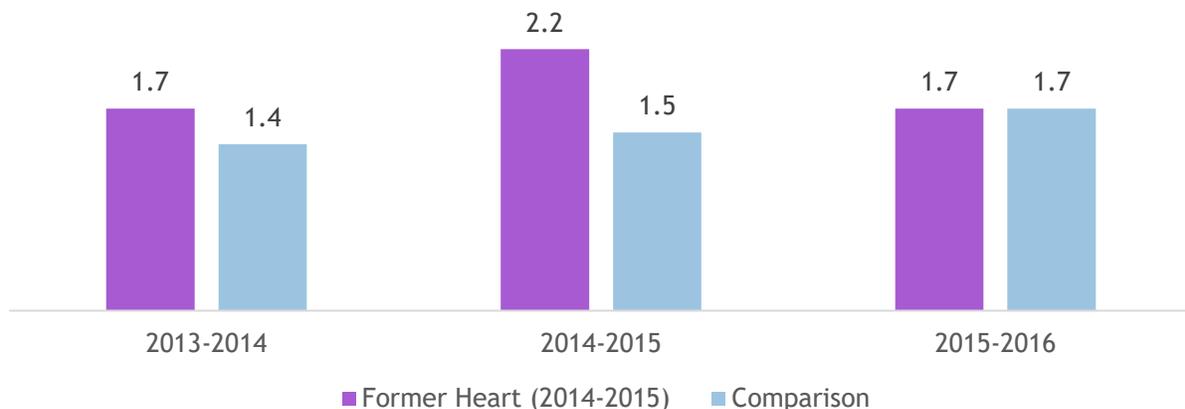
However, for the students who did not continue to be served by Heart in 2015-2016, their EOG performance - as well as suspension and attendance outcomes - returned to the levels they were at before receiving Heart services. On the other hand, students who did continue to be served continued to exhibit similar outcomes in 2015-2016 as students being served by Heart for the first time that year. For example, MAP math growth scores from fall to spring of the 2015-2016 school year averaged 13.5 points for students who were served for multiple years, 14.3 points for students being served for the first time in 2015-2016, but only 8.7 points for students who were no longer being served by Heart. By comparison, students who had never been served by Heart - those in the matched comparison sample - averaged 11.2 points of growth from fall to spring of 2015-2016.

Former Heart students demonstrated low growth in math MAP assessments from fall to spring of 2015-2016 compared to other students



These results primarily suggest that Heart provided a boost to student outcomes after one year of participation and that students who continued to receive tutoring maintained this growth; however, end of participation brought a return to pre-Heart levels, with students demonstrating diminished growth the year after participation (perhaps because they experienced larger-than-usual growth the year they were served). However, the data - limited to observations of only two cohorts of Heart students, and outcomes one year removed from Heart for only one cohort - do not allow these interpretations to be made conclusively.

Heart students' math EOG achievement level reached its highest average while being served by Heart, but returned to pre-Heart levels after tutoring ended



When examining differential outcomes by grade level, few differences emerged. The most evident exception was MAP growth for 1<sup>st</sup> grade students. First grade students served by Heart in 2015-2016 demonstrated very high growth scores from fall to spring in math, at an average of 25.8 points of growth. By comparison, 1<sup>st</sup> graders in the comparison group demonstrated 17.5 points of growth, and Heart students in all other grades demonstrated between about 12 and 14 points of growth. Heart 1<sup>st</sup> graders did not show such substantial differences in their reading MAP assessments, suggesting this growth in math was contained to math, and was not due to growth in academic ability generally.

Finally, a review of Heart program data revealed that Heart's internal assessment measures were closely correlated with EOG outcomes. Students who demonstrated growth and mastery on Heart's internal assessment measures tended to demonstrate better outcomes on their math EOGs and were more likely to show improvement over their previous year's EOG performance. Growth on Heart measures was less strongly associated with MAP growth, though students who demonstrated growth in a greater percentage of Heart content areas were more likely to meet their MAP growth targets in math. However, the number of tutoring sessions attended had no clear relation to performance outcomes on either EOG or MAP assessments.