

Proven Practices

Mathematica Finds Positive Outcomes for Math Corps



Math Corps is an evidence-based, high dosage tutoring program for students in grades 4-8 (Parker et al., 2019; Coddington et al., 2022). To broaden its evidence-base, Mathematica—a national leader in educational evaluation—examined the outcomes for Math Corps in two novel ways. First, it examined student outcomes in a diverse sample of students—from majority-Black schools in two different state contexts (Georgia and Minnesota). Second, it examined the quality of student-tutor relationships that are a crucial contextual factor for learning. For a full overview of Math Corps, refer to readingandmath.org.

The Project

Via funding from the Gates Foundation, Mathematica sought to determine the impact of Math Corps on student outcomes as well as better understand the nature student-tutor relationships. The project was guided by several research questions, including:

1. Do students who participate in Math Corps score higher on a robust, valid measure of math knowledge?
2. Do students who participate in Math Corps report having a high-quality relationship with their tutors?
3. Do students who participate in Math Corps report higher levels of belonging and confidence, and are these levels associated with relationship quality?

Why It Matters

Math Corps works, and establishing that it works in varied community contexts is critically important. It is equally important to advance understanding of how Math Corps impacts the interpersonal aspects of learning, which are especially influential in math (Roorda, Koomen, Spilt, & Oort, 2011).

Key Takeaways

- Students who receive Math Corps have significantly higher math skills.
- Math Corps students report high relationship quality with their tutor and a correspondingly high sense of belonging.
- Math Corps students report increased math confidence.

Methodology Overview

To determine the impact of Math Corps on student outcomes, the evaluators used a quasi-experimental design that matched students based on several factors, including initial math skills, and then compared math performance at the end of the school year. To understand student-tutor relationship quality, student sense of confidence, and math confidence, the evaluators drew from several proprietary, technically-sound surveys, and further explored themes via targeted interviews and focus groups. See Table 1 for a summary of the sample participants.

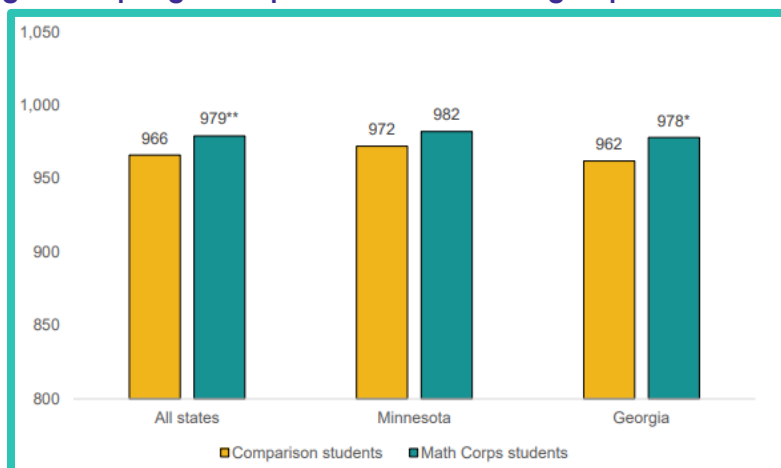
Table 1. Summary of Student Sample

	Treatment	Comparison
Math Skill Sample	118	75
In 4 th -8 th grade	✓	✓
Similar demographics (race, gender, location)	✓	✓
Similar initial skills	✓	✓
Survey Sample	107	n/a

Results

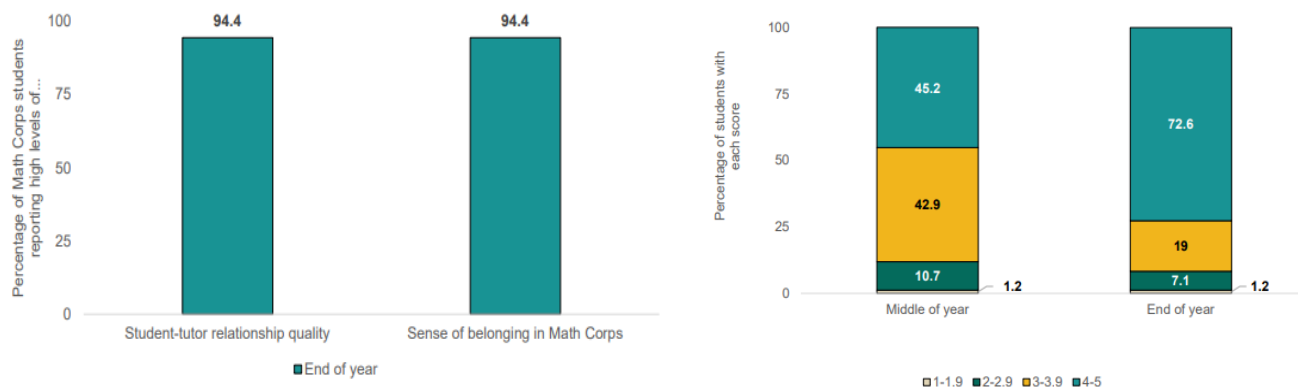
Linear regression-adjusted spring performance on math outcomes showed that students in Math Corps performed an average of 13 scaled score units higher than students in the comparison group, or the equivalent of 0.18 standard deviation units. Such a difference is comparable to a roughly 7 percentile point advantage. Figure 1 shows overall spring performance and average performance in each state.

Figure 1. Spring math performance across groups and states



Students reported high relationship quality and a strong sense of belonging, which were strongly correlated ($r = 0.65$). Finally, math confidence grew considerably over the course of the year (See Figure 2).

Figure 2. Survey results for relationship quality, sense of belonging, and math confidence



Based on the current project, Math Corps is considered an evidence-based tutoring program that works across state and local contexts and that improves outcomes for diverse learners.

Continuous Improvement

Math Corps is one of the country's only evidence-based, scaled tutoring programs for math. Although the current evaluation further broadens support for the program, it is the first set of findings about the interpersonal outcomes of the program. Additional evaluation can help expand the understanding of Math Corps with respect to student confidence, sense of belonging, and the relationship between students and tutors. The current survey did not include a comparison group and was first conducted midway through the school year. Opportunities exist to understand the unique impact of Math Corps on confidence, belonging, and relationship quality—as well as how that impact changes over the course of a year.