



Selecting and Supporting Math Tutoring Programs: Recommendations for School Districts

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Math tutoring can boost students' learning outcomes (Nickow et al., 2020), and many believe tutoring is one of the most promising strategies to respond to pandemic-related learning loss (Robinson et al., 2021). Meanwhile, districts have a tremendous number of options when considering potential tutoring programs. The Middle Years Math project, funded by the Bill & Melinda Gates Foundation, examined a portfolio of eight tutoring programs and their effects on student knowledge, perceptions, and beliefs about math. The average effects of these tutoring programs were positive and meaningful, and multiple program models showed promise even though their key features varied significantly (see box on this page).¹ This brief describes four recommendations for school districts to consider when exploring potential tutoring programs. The recommendations are based on the results of the Middle Years Math evaluations conducted in the 2021–2022 school year.²

Tutoring Program Features

- In school or after school
- Virtual, in person, or hybrid
- Staffing model (paid, AmeriCorps, volunteer, former teacher)
- Tutoring group size
- More or less intensive

Recommendation 1: Consider in-person and virtual tutoring options—both can be effective.

Evidence from the eight tutoring programs suggests that virtual tutoring might be as effective as in-person tutoring. Students who received virtual tutoring had similar gains in math knowledge as students who received in-person tutoring. In addition, students receiving virtual tutoring were still able to build strong relationships with their tutors—a factor linked to more positive gains in math knowledge—despite the physical distance between them.

¹ Tutoring students in groups as large as 10 students per tutor showed promise, but this finding requires more study.

² [Testing New Approaches to Math Tutoring: Lessons from Eight Evaluations](#) describes the findings from these evaluations in greater detail.

Ask potential tutoring providers:



- Do you offer in-person, virtual, or hybrid tutoring? What is the per-student cost for each model you offer?
- Where and when have you implemented virtual tutoring before?
- How was your tutoring model designed or adapted for a virtual environment?
- Who supplies devices for the students and tutors? What do you expect our schools to provide (e.g., minimum internet speed)?
- How will your tutors build relationships with my students in a virtual setting? ▲

Creating an engaging virtual tutoring experience requires specific considerations around classroom management, technology, and collaboration. One tutoring provider found that virtual tutoring attendance was higher in schools where a staff member other than a classroom teacher served as a program coordinator. This coordinator monitored attendance, helped students connect to the tutoring platform and stay on task, addressed challenges such as access to devices and internet connectivity, and actively communicated with the tutoring provider to offer context on the classroom environment and troubleshoot challenges. Collecting feedback from students on how they experienced virtual tutoring also yielded useful insights. For example, one provider learned that considering where students were positioned in the classroom was important—when connecting with one virtual tutor as a group, the students felt awkward sitting next to each other while interacting virtually with their shared tutor. Another provider created an option for students to share their own “virtual whiteboard” with their tutor rather than defaulting to one group workspace. With this option, students could show work and ask questions one-on-one, simulating when a tutor comes over to a student’s desk.



TIP: Periodic surveys or feedback on students’ perceptions of their tutoring experience can identify timely opportunities for improvement.

Virtual tutoring may have implications for cost and staffing models. When providers can recruit tutors from across the country, they may be more successful in attracting and retaining tutors over time. Virtual tutoring also makes it more feasible to employ experienced teachers as tutors, who may be more effective but would be too expensive to employ for full-time, in-person roles. Finally, some virtual programs can offer 24/7, just-in-time tutoring to students whenever they need it.

Recommendation 2: Monitor implementation and attendance regularly.

All the tutoring programs (or schools within programs) that generated moderate to large effects on math knowledge were successfully implemented. This means they had the planned staffing, logistics, and supports in place, and students showed up to and participated in the tutoring at high rates. When programs encountered challenges that affected their ability to implement critical components of their program, such as recruiting and retaining tutors and getting students to complete assignments, the effects on student math knowledge tended to be lower. In cases where programs struggled to retain tutors, students reported lower-quality relationships with their tutors, on average.

Monitoring attendance and implementation regularly will create opportunities to detect when implementation is off track, and uncovering any challenges early on will give you more time to work with your provider on solutions.



TIP: In addition to attendance, consider monitoring and troubleshooting issues related to tutor hiring and retention, number of students served, amount of tutoring received (dosage), student engagement with the tutoring, and implementation of the program’s critical components.

Ask potential tutoring providers:



- What is the average attendance rate for your program?
- How can we track attendance in your program in real time?
- What is your retention rate for your tutors?
- What would you consider the critical components of your tutoring program? How can we work together to make sure all these components are successfully implemented? ▲

Recommendation 3: Integrate tutoring into your regular school day.

Learning cannot happen without consistent attendance, so it is unsurprising that attendance in tutoring sessions was closely related to growth in math knowledge among these programs. In-school programs generally had higher

attendance (and larger effects) than after-school programs. On average, attendance rates in tutoring programs offered during the school day were 12 percentage points higher than rates in tutoring programs offered after school (83 percent versus 71 percent). Within one program that operated in school at some schools and after school at others, we observed the same pattern: the in-school tutoring had higher attendance (by 15 percentage points). This tutoring provider also reported that students in the after-school program were less engaged and more likely to leave before the lesson was over due to conflicting commitments or parent pickup schedules.



TIP: Successful scheduling of in-school tutoring requires sustained and close coordination between school officials who have visibility into students' schedules (including noninstructional or elective periods) and the tutoring provider.



TIP: If after-school tutoring is the only option for your district, consider some strategies from one after-school program that was able to generate high attendance. This program focused on building relationships with families, offered tutoring to siblings and programs for parents, recruited tutors who shared lived experiences with students, and incorporated culturally responsive methods into tutoring. The program also set clear expectations about attendance requirements for students to be eligible to continue in the program the following year.

Recommendation 4: Identify tutoring providers that tailor professional development to their tutors' level of experience and invest in student-tutor relationship building.

Programs that improved outcomes for students used a range of staffing models with professional support tailored to staff's level of experience. Programs that used volunteers or AmeriCorps staff provided scripted lessons and substantial training to build their capacity as tutors. Programs that hired more experienced tutors offered higher wages, but they did not invest in substantial tutor training.

Strong student-tutor relationships were associated with several desirable outcomes of tutoring, including gains in math knowledge, consistent attendance, and a sense of belonging in the tutoring program. Programs with the strongest student-tutor relationship ratings incorporated noninstructional, morale-boosting or team-building activities; provided tutors with robust culturally responsive or trauma-informed training; and recruited tech-savvy tutors with engaging personalities for virtual positions.

Ask potential tutoring providers:



- Do you offer school-day tutoring, after-school tutoring, or both?
- If in-school, how does your model fit within (or how could it be adapted to) the constraints of my schools' schedules?
- If in-school and virtual, what are your expectations around in-person staffing required for the model to be successful (e.g., for classroom management)? ▲

Ask potential tutoring providers:



- What type of training and support do you provide for your tutors?
- Are tutors volunteering or paid? What prior experience do you look for when hiring?
- Will my students work with one consistent tutor or multiple tutors?
- Do your tutors have similar identity traits or life experiences as my students? ▲



TIP: Consider providers that recruit tutors who have similar identity traits or life experiences as students in your district. Several of the tutoring programs with meaningful effects on math knowledge hired tutors whose identities or lived experience aligned in some way with the students they worked with. This practice draws on evidence of the importance of shared identity between students and educators (Gershenson et al., 2022).

References

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The Bill & Melinda Gates Foundation Middle Years Math Portfolio

As part of its Middle Years Math portfolio, the foundation awarded grants to education developers to develop, test, and refine programs that aim to improve student outcomes in math. The portfolio's goal is for all students who are Black, Latino, and/or experiencing poverty to deeply know, be able to use, and enjoy math by the time they reach high school.

Findings from this project are also described in:

- [Testing New Approaches to Math Tutoring: Lessons from Eight Evaluations](#)
- [Examining Student and Teacher Math Learning: Lessons from Three Summer Programs](#)
- [Air Tutors' Online Tutoring: Math Knowledge Impacts and Participant Math Perceptions](#)
- [Blueprint Math Fellows Tutoring Program: Math Knowledge Impacts and Participant Math Perceptions](#)
- [Breakthrough Collaborative's Tutoring Program: Math Knowledge Gains and Participant Math Perceptions](#)
- [Cognition Group Tutoring: Impacts on Students' Math Knowledge and Perceptions](#)
- [Impacts of UPchieve On-Demand Tutoring on Students' Math Knowledge and Perceptions](#)
- [Math Corps' Tutoring Program: Math Knowledge Impacts and Participant Math Perceptions](#)

Mathematica has also released the Measurement and Evaluation Toolkit used for this project, which is available at <https://mathematica.org/features/advancing-educational-equity>.

This publication is based on research funded by the Bill & Melinda Gates Foundation. The findings and conclusions contained within are those of the authors and do not necessarily reflect positions or policies of the Bill & Melinda Gates Foundation.

