A Target Program Profile for Middle Years Math Tutoring

BILL & MELINDA GATES foundation

intentional futures

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The Target Program Profile (TPP)

Why did we develop this profile?

There is a strong evidence base showing the effectiveness of tutoring, especially in the area of mathematics. However, the picture of effective tutoring revealed by current research and practice is markedly different than what most of us imagine when we hear the phrase "tutoring."

Additionally, providing high-quality tutoring to students who are Black, Latino, and/or experiencing poverty requires programs to engage with issues of systemic racism and oppression. This includes everything from unconscious tutor bias, to socioeconomic injustice, to inequitable access to high-quality instruction, and more.

This document is an effort to bring all of those elements into focus. It provides a picture of what it looks like to provide effective tutoring for students who are Black, Latino, and/or experiencing poverty.

How was this profile developed?

This document was developed by the education team at Intentional Futures, in partnership with the Bill & Melinda Gates Foundation and in consultation with over 50 different stakeholders, including providers, educators, students, and parents. It is focused specifically on effective tutoring in mathematics in the middle years, grades 3 through 9. Our goal was to better understand what makes tutoring effective and accessible for students who are Black, Latino, and/or experiencing poverty, in order to help providers meet those needs.

Our team started by studying the literature on effective tutoring, with an emphasis on studies of middle years math. We looked for evidence of the overall effectiveness of tutoring[9, 10] and for models that were effective with students experiencing poverty and students below grade level.[3, 4] Across these studies, we looked for common features and principles that may have contributed to their effectiveness.[1, 7]

Once grounded in the literature, we conducted extensive stakeholder interviews. We talked with the people behind many of the programs cited in the research, as well as newer organizations who were innovating from those models. We talked with teachers and school leaders with first-hand experience implementing tutoring solutions. And we talked with the tutors and students working within these and other programs. [see acknowledgments]

After synthesizing the interviews, we formed a small co-design team of principals, teachers, and tutors. Their voices were central to this work; this team reviewed our findings, clarifying insights and correcting our assumptions. Their feedback guided us as we developed and iterated on the final profile.

What is this profile?

The Target Program Profile (TPP) is the result of that work. It is a working hypothesis, informed by research and stakeholders, about what makes an effective, middle years math tutoring program. We hope it will guide both funders and providers as they seek to drive innovation in this space and implement scalable tutoring programs for the students that need it most.

The 7 Drivers

Definitions

Our work revealed seven drivers that were key to implementing an effective, sustainable tutoring program.

Drivers

Curriculum alignment
Programs align their sessions with school curriculum, focusing on conceptual understanding of priority standards.

Data-informed decisions
Programs use data to inform enrollment, session content, and program evaluation.

High-quality sessions
Programs employ regular, small group sessions with purposeful structures that engage students.

High-quality tutors
Programs develop skilled, relational tutors through selective recruitment and ongoing training.

School integration
Programs integrate directly into school schedules and collaborate closely with school and district staff.

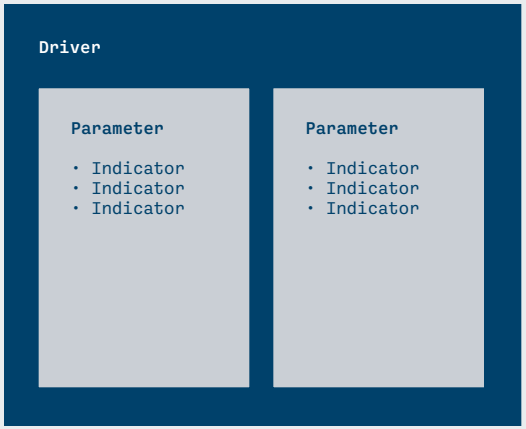
Innovative technology
Programs lower cost while increasing reach and impact through blended and virtual solutions.

Affordable cost
Programs achieve a sufficiently low price per student and secure a reliable funding source.

The structure of a driver

Each driver comprises a set of *parameters* that clarify its important elements. Each parameter has one or more *indicators* that describe its observable characteristics.

Driver structure



How to use this profile

The rest of this document lays out all seven drivers, with their respective parameters and indicators. The drivers reflect what we know from research as well as what matters to stakeholders within the community. As you consider what makes a high quality tutoring program, including how that program needs to engage with systemic racism and systems of oppression, this profile can serve as a guide. It will help identify a program's strengths as well as potential opportunities to increase its effectiveness.

Focus on Students

This profile was built with input from a range of stakeholders, each with an important perspective. However, as you read it, we want you to hear the voices of students and families most of all.

In this section, we've described briefly the conditions that students cared about most, and we've listed the specific parameters that contribute directly to each. The terms used here are ours, but throughout the profile we've used parents' and students' own voices to call out each parameter individually. Pay special attention to these highlights as you think about how to best serve your students and their families.

Student insights
Safety, math identity, and support networks

Students and their parents shared how much emotional safety mattered, what it took to build confidence, and the ways programs could provide more support.

"She wanted more face to face time with the math coach. It was almost like, 'Now I'm confident enough. I'm doing it on my own. I understand it. So yeah, I want to have more face to face.' When school was in session she didn't always want to go to the classroom every day and do math there out of fear that others would know her weaknesses."

Parent
Grade 6

As a student, I want to feel...

...Safe.

Tutoring needs to be a place of emotional safety. The classroom is sometimes not a safe environment for students to take intellectual risks or ask for the help they need. Anxiety about teacher perceptions and peer reactions keeps students from fully engaging; especially when they feel confused. Students discussed how empathetic tutors, small groups, and safe peers all helped provide the safety they needed.

Parameters
Small groups
Tutor rapport
Enjoyment

...Confident.

Tutoring needs to strengthen students' math identity. The way in which students engage with math is driven by their level of confidence and their math identity. One of the primary aims of tutoring should be to strengthen students' math identity. Students talked about this happening when they saw tangible progress and when they realized that they'd mastered a concept independently. Parents described moments of affirmation that shaped their students and offered specific insights into how tutors could connect with their student as an individual.

Parameters
Conceptual understanding
Formative assessment
Growth mindset
Student buy-in

...Supported.

Students need a support network outside the classroom. Whether the context is traditional homework or distance learning classwork, students need to be able to get help outside of school. That might come from trustworthy tutors that make themselves available after hours. However, it can also come from family members who've been equipped with more tools to support their students. And it might even come from the right peers, through innovative applications of technology.

Parameters
Enrollment
Family buy-in
Scheduling
Online tutoring

Driver: Curriculum Alignment

Many of us are familiar with the "homework help" model, where a student brings the problems they missed from an assignment for a tutor to coach them through. However, effective tutoring looks very different. The tutor uses curriculum materials and assessment to plan and deliver each session; they are not dependent on students to provide the content.

Sessions address skill gaps from the current or prior years, but they are focused on the priority standards at each grade level and the skills that ladder up to the work being done in the classroom. The tutor also uses the same terminology as the classroom teacher.

Finally, the tutor focuses on strengthening students' conceptual understanding and their use of mathematical practices, not simply building procedural fluency. A structured, curriculum-based tutoring model is crucial given that students who are Black, Latino, and/or experiencing poverty often receive less access in school to strong instruction and deep engagement.

PARAMETERS

Scope and sequence

Conceptual understanding

Personalization

Priority standards

Consistent terminology

Parameters
Curriculum Alignment

Student insights
Conceptual understanding + math identity

Students described a positive shift in their math identity, not when they got individual problems right, but when they realized they understood a concept for themselves.

"Personally, I don't want you to give me an answer. I want you to help me understand this so I can do it by myself. Because nobody's gonna do it for me one day. So I have to do it for myself."

Student
Grade 10

Scope and sequence

Like teachers, tutors need a high-quality curriculum to support their work. Tutors' planning time should be spent selecting problems and examples, not creating them. Programs may use a different curriculum from the classroom. However, both must be standards-aligned and tutors must be able to sequence their materials to support the work students are doing in the classroom. The site director plays a key role in maintaining this alignment between classroom content and tutoring sessions.

INDICATORS

- Tutors are provided with standards-aligned curriculum containing worked examples, open-ended problems, and practice sets.
- Sessions are informed by current classroom content.
- Sessions prioritize the current and prior-grade skills that ladder up to current classroom content.

"I think it's really important that when students are getting help outside the classroom, that it's relevant to what they're learning—either what they're learning right now or the pre-skills they need to access the curriculum."

Carlos Flores
Math Teacher, Woodside High School

Conceptual understanding

Students who are Black, Latino, and/or experiencing poverty are often denied access to rigorous, engaging instruction at school.[13] Likewise, tutoring can slip into simply training students on algorithms or coaching them through difficult problems. Effective tutoring should focus on building conceptual understanding so students grow confident in how to apply various strategies. Procedural fluency should be addressed, but without becoming the central concern.

INDICATORS

- Sessions emphasize building conceptual understanding and mathematical behaviors.
- Sessions avoid an overemphasis on problem completion and/or procedural fluency.

"We don't teach to get the answer. We don't teach a procedure. We teach the concept. We step back from the original question to think about the bigger picture so the student discovers why a procedure works, when it works, and how to apply it in other contexts."

Tino Mireles
Teacher, Imagine Math

Personalization

Personalized support should not be confused with a singular focus on remedial skills. Research shows that many schools already provide inequitable access to grade-level content.[13] Tutors must maintain a difficult balance between addressing skill gaps from prior years while also helping students engage with grade-level content. Mathematical skill progressions should guide tutors in identifying the prior-grade skills that support current classroom lessons.

INDICATORS

- Sessions balance targeting individual student needs and supporting current classroom content.
- Tutors provide more personalized support for students with larger skill gaps.

Priority standards

Tutors who are trying to address prior-grade skills while also supporting classroom content will not be able to cover everything. In collaboration with teachers, tutors must prioritize certain skills and concepts. Those decisions should be guided by the most important standards at each grade level.

INDICATORS

- Sessions focus on the priority standards of a grade, for both on-grade and prior-grade skills.

"What's the essential, critical learning at each grade? That's what we want to focus on. You can spend too much time going back and thinking you need to fix everything."

Cathy Martin
Associate Chief of Academics, Denver Public Schools

Consistent terminology

Tutors will have invariably learned math differently than their students. If tutors teach the terms and procedures they are familiar with, instead of the ones being taught in the classroom, it can confuse students and frustrate the teacher's efforts. Additionally, providing all students access to academic langauge is an issue of equity, as academic achievement often necessitates fluency in academic language.

INDICATORS

- Tutors reinforce the academic language, models, and procedures of the classroom.

CASE STUDY

Denver Fellows developed a classroom-aligned curriculum for tutors

Program
Denver Fellows

Geography
Denver, CO

Grades
4th, 6th, 9th

Denver Fellows is a long-standing math tutoring program in Denver Public Schools. Tim Johnson, the founding director, modeled it off of the successful Apollo 20 program which he co-founded in Houston, TX. However, one of the major changes Johnson and his team made when developing Denver Fellows was the curriculum.

In previous iterations of the program, tutors were using classroom materials, but they were arriving weekly and were sometimes piecemeal. It aligned the tutoring sessions to classroom work but made planning and prioritization difficult. With Denver Fellows, Johnson and his team built a structured scope and sequence that aligned with the core classroom instruction. They curated units for each grade.

As Johnson said, it was an exercise in asking, "What are the foundational skills that kids need? And then what are the most important standards in this unit that they're learning in class?" Providing tutors with a classroom-aligned curriculum grounded in priority standards has been a foundational component of the Denver Fellows' success.

Driver: Data-informed Decisions

Tutoring programs must be systematic about leveraging data to inform enrollment, session content, and program evaluation. School and program staff should use benchmark data and other measures to determine enrollment. Programs that depend on students to self-select risk perpetuating systems of inequitable access to resources and opportunity.

Each session should be informed by formative assessment data from prior sessions, classroom activities, and adaptive practice. Finally, school and program staff should be collecting progress monitoring data to regularly evaluate and improve the program's overall effectiveness.

PARAMETERS

Data privacy

Enrollment

Program evaluation

Formative assessment

Parameters
Data-informed Decisions

Data privacy

It is critical that programs have access to relevant student data to inform key decisions. It is also critical that schools and programs follow best practices and requirements regarding data privacy as they collaborate together around student data.

INDICATORS

- Schools and programs follow best practices and requirements for data privacy when sharing student data.

Enrollment

Systems that rely on students to self-select into the program privilege families with greater access to information, language, and resources. Schools and providers should determine enrollment to ensure that the program is reaching each of the students that need it the most. They should draw on multiple data points to make as informed a decision as possible. If a student has higher-priority needs that would prevent tutoring from being effective, schools should ensure that supports for those needs are in place first. Data should also be used to form optimal small groups and match tutors with students.

INDICATORS

- Benchmark data are combined with other measures to identify eligible students.
- Needs that would prevent tutoring from being effective for a student (e.g., chronic absenteeism, specialized behavioral supports, language acquisition, etc.) may be addressed through other interventions first.
- Enrollment is determined by the school and the provider and does not require students to self-select.

"Enrollment would start by narrowing it down using MAP data, then using some of our interim data, and then getting it even closer, down to the teacher level, of knowing who the students are who are really struggling within that."

Katie Cooney
Specialized Programming Director, Hiawatha Academies

Student insights
Support networks

Several students named middle school as the time when math "started to get hard." It's a critical time to ensure students have the support they need.

Program evaluation

As with any good intervention, the program needs to collect progress monitoring data to regularly assess its effectiveness. Evaluations should use metrics that matter to students and be conducted for the purposes of identifying inequities and advancing more equitable outcomes. Site directors should help collect and analyze this data. Together with tutors, teachers, administrators, and students they should identify what is working well and make adjustments to the program where needed.

INDICATORS

- Program and school administrators use multiple measures to periodically monitor program effectiveness.
- Assessment measures used for program evaluation align with classroom curriculum and session targets.

Formative assessment

The personalization that is central to tutoring must be driven by regular formative assessment. To do this, schools and programs will need effective systems of information sharing in place. Tutors should be able to draw on classwork, assessments, adaptive practice data, and notes from previous sessions to plan their work with students.

INDICATORS

- Tutors use formative assessment data from each session to inform future sessions.
- Tutors access formative assessment data from outside the session like classwork or adaptive practice to inform future sessions.

"The tutors have access to our grading platform, so they can look at data for their students. They can run data for their groups, so they know where their kids are performing and can make informed decisions."

LaNitra Curtis
Principal, Aspire Stockton Secondary Academy

Student insights
Formative assessment + math identity

When students could see measurable growth it strengthened their belief in their abilities and their determination to persist.

"My daughter learned to evaluate her progress in ALEKS; she learned to read the data in the graphs for herself. She was hyper-focused on, 'Look, I got one more! Look at the circle; it's growing!'"

Parent
Grade 6

CASE STUDY

Data drives the entire life-cycle of a tutoring intervention

Program
In-house intervention

Geography
Central CA

Grades
6–12

At Aspire Langston Hughes Academy in Stockton, CA (grades 6–12), tutoring and intervention is always informed by data. Staff use benchmark data such as the SBAC and ACT to flag students. Then they use a data matrix which adds STAR, Smarter Balanced interim assessments, iReady, and classroom grades to further understand which students need support. Identified students receive small group tutoring from both classroom teachers and paraeducators.

To guide their sessions, teachers use data from classwork and exit tickets, and paraeducators have access to the school grade book. Teams meet weekly with the dean of instruction and the site director to analyze data and plan lessons. Student data drives the process throughout.

In the words of LaNitra Curtis, former dean of student support and intervention, "I think the main reason tutoring fails is because we're unclear about what we're trying to accomplish. Everybody—school, parent, student—needs to be very clear that, 'Hey, this is the thing we're trying to do.'"

Driver: High-quality Sessions

High-quality sessions are driven by the tutor's genuine belief in students' ability to learn and excel, and their consistent affirmation of students' identities. Tutors acknowledge and address their unconscious bias around race, gender, and/or socioeconomics. Through culturally affirming practices, tutors create an environment where students develop an enjoyment and confidence in math.

Sessions have a predictable structure, and the tutor facilitation results in students doing most of the thinking and talking. While one-to-one sessions can be effective, they can also be prohibitively expensive. Group sessions that are small enough for tutors to manage while still addressing individual needs significantly decrease program costs. Students also enjoy the benefit of dialogue and peer collaboration.

Finally, sessions support students' use of interactive tools, academic vocabulary, and their native language, in order to master content.

PARAMETERS

- Session structure
- Session facilitation
- Small groups
- Language
- Enjoyment
- Growth mindset
- Learning tools
- Dosage

Parameters

High-quality Sessions

Session structure

While particular routines may differ between programs, an established structure sets clear expectations. It supports the tutor's ability to manage the session and helps focus the students. Sessions should always be structured around explicit goals for students and should provide space for dialogue and collaboration, as well as independent practice.

INDICATORS

- Sessions have a predictable structure that supports tutors and increases student engagement.
- Sessions focus on targeted learning goals.
- Sessions include personalized, independent practice with space for productive struggle.

Session facilitation

Sessions should be grounded in the principle that whoever is doing the talking and doing the work is doing the most learning. Tutors must hold back from explaining; rather, they facilitate the critical thinking process and pose thoughtful questions that allow students to reason their way through problems. By talking and working through challenging concepts, students develop both mastery and self-confidence.

INDICATORS

- Tutors ask open-ended questions that promote critical thinking and justification.
- Students spend more time doing math than observing math.
- Students spend more time talking than listening to the tutor.
- Tutors are trained and supported in managing student behavior.

Student insights
Small groups + safety

Students talked about small groups as a uniquely safe place, away from the pressures of the classroom and even friends. They liked the attention from the tutor and the chance to learn collaboratively with peers on an equal footing.

"In tutoring, the tutor would take people and put them in groups, so we're all on the same question. I really liked those groups because everybody was understanding the same thing. In class, the teacher would start teaching to the whole class, but some other students already got it and they'd be like, 'But we already got the answer.'"

Student
Grade 9

"I like working with small groups of students because I feel like students can sometimes explain the material in different ways than the teacher."

Student
Grade 9

Small groups

Small groups provide the benefits of tutoring while dramatically lowering the price per student. While 1:1 tutoring certainly works,[2] tutoring in groups of 2–4 students has also proven effective.[3, 4, 10, 11] Group sizes may vary across programs. However, groups larger than four can be difficult to manage, especially with younger students, and personalization and tutor rapport may suffer.

"We matched 30 students so each pair of students had a dedicated tutor, four days a week. It was amazing seeing the level of academic achievement that those kids had in less than a semester."

Hasan Ali
CEO, Air Tutors

INDICATORS

- Sessions contain 2–4 students.
- Students are grouped by relatively similar ability levels.
- Groups are used to promote dialogue and collaboration between students.
- Within groups, there is still time and space for 1:1 support.

Sufficient	**Ideal**
4 students	2 students

Language

Students for whom English is not their first language must still be able to access resources and engage in rich dialogue. Online tutoring may help increase students' access to tutors fluent in their first language. Additionally, all students need practice using academic vocabulary.

INDICATORS

- Students have opportunities to reason, dialogue, and access materials in their first language.
- Students have opportunities to learn and practice academic vocabulary.

Student insights
Growth mindset + math identity

Parents could quote the compliments that tutors or other family members had given, because students shared them with such pride. Genuine affirmation from trusted figures became touchstones for students that informed their identity and built their confidence.

"There was a time when one of the tutors said, 'Well, you're doing eighth grade math right now,' and it was huge. She was like, 'Mom, I'm doing eighth grade math!'"

Parent
Grade 7

Growth mindset

Tutors believe that everyone is a math person and actively affirm that identity in students. This begins by examining their own unconscious biases around race, gender, and/or socioeconomics. Tutors continually help students see the relationship between their practice and improved performance to strengthen students' confidence and belief in their abilities. Tutors model their own willingness to learn from mistakes. They ensure that the session is a uniquely safe place for students to take risks, make mistakes, and then revise their thinking.

INDICATORS

- Tutors are explicit in teaching students to have a growth mindset response to mistakes.
- Sessions are a safe space where students are encouraged to take risks.

"You need a willingness to make mistakes in front of the students. Let the students find your mistakes. Give them a sense that this is not a genetic issue. You're not born to be a mathematician. Anybody can be one."

Claudy Chapman
Resident Site Director, Saga Education

Enjoyment

By focusing on cognitive engagement and recognizing student accomplishments, tutors create the conditions that allow students to experience the joy of math. Students build a positive math identity and see the relevance of math to their own lives. Tutors also remove barriers that inhibit students' enjoyment of math. Among other things, this means avoiding practices that over-emphasize performance and induce stress, like quizzes and cold-calling.

INDICATORS

- Sessions are low-stress environments where student engagement and accomplishment leads to an authentic enjoyment of math.

Student insights
Enjoyment + safety

Playing math games or doing outside-the-box activities like mathematical art, helped students tap into a sense of joy and creativity that energized them through moments of productive struggle.

Learning tools

Both tutors and students need tools that enable them to sketch and visualize concepts. Access to these tools must be shared so that students can drive the thinking and so that everyone in the session can collaborate. Additionally, tutors teach students structured note taking, both to reinforce their understanding and to serve as a reference during their work outside the session.

INDICATORS

- Tutors and students have shared access to physical or digital tools for sketching and visualizing.
- Students are taught to take and use age-appropriate notes to reinforce their learning.

Dosage

Research suggests, not surprisingly, that the impact of tutoring is related to the total amount of tutoring received.[7] There may not be a strictly linear relationship, as studies have shown significant effect sizes with varying dosage combinations.[10] However, high-dosage implementations, where sessions occur 4–5 days a week, for 30+ mins, across the majority of the year, have repeatedly shown very promising results, especially with students who are performing significantly below standard.[3, 4, 7, 12]

"Session duration and frequency is of the highest importance. I think our tutoring works really well because the kids have it every single day."

Raegina Mafnas
7th Grade Math Teacher,
United for Success Academy

INDICATORS

- Session frequency is 3–5 times a week.
- Session length is 30–60 mins.
- Intervention duration is 12–36 weeks, as determined by progress monitoring data.

	Sufficient	Ideal
Freqency	3x week	5x week
Length	30 min	60 minutes
Duration	varies by student	36 weeks

CASE STUDY

Saga Education structures its sessions for high dosage and high impact

Program
Saga Education

Geography
New York City, Chicago, Washington D.C.

Grades
9–12

Saga's high-dosage model aims to provide each of its students with tutoring five times a week. Sessions are treated as regular classes in the student's schedule, so each session is a full period in length. While implementations vary slightly based on the scheduling needs of each school, this overall structure provides every Saga student with a consistently high dose of tutoring across the year.

Saga also works to maximize the time within each session. Each session follows the same basic structure, establishing a familiar routine for students. Students start with a silent exercise that centers them as they enter the Saga classroom. The tutor then transitions students into a critical thinking task that allows the tutor to diagnose their understanding. From there, the group moves on to example problems, providing significant time for collaboration, discussion, and learning. Finally, students work through individualized problem sets chosen by the tutor, followed by an exit assessment to evaluate their mastery of the day's content.

Driver: High-quality Tutors

The importance of tutor quality cannot be understated. Programs must place a premium on recruiting, training, and retaining only the highest-quality tutors.

A tutor's effectiveness is amplified when they develop caring and consistent relationships with their students. Therefore, while competency in the subject matter is important, programs should also be recruiting for and cultivating the soft skills that drive positive relationships. These include cultural awareness when interacting with students and families, and communication skills for collaboration with program and school staff.

Programs should be conscious of the racial and gender makeup of their tutor corps, as it is empowering when students see themselves reflected in their mentors. Programs must also develop tutors' skills through ongoing, individualized coaching and continuous professional development. This includes training on math pedagogy, session facilitation, unconscious biases, and racial equity.

PARAMETERS

Tutor expectations
Tutor background
Tutor qualities
Tutor rapport
Tutor training
Program staffing

Parameters
High-quality Tutors

Tutor expectations

Tutors must approach students with a growth mindset and a genuine belief in their ability. Tutors must also have a growth mindset of themselves. This means they first need to interrogate and address their own unconscious biases. Tutors need to hold their students to high standards, normalizing mistakes while keeping them accountable for their progress and pushing them to engage in complex tasks. Students need to know, without any doubt, that their tutor believes in their capacity to learn, grow, and excel.

INDICATORS

- Tutors have examined their unconscious biases around race, gender, and socioeconomics.
- Tutors have high expectations for students' ability to think critically and solve problems.
- Tutors believe strongly in students' ability to learn and excel and consistently affirm their strengths and abilities.

"It's critical to believe that everybody can learn the math at the highest level. That has to be there. If you can't believe that, then you're not going to push that. You're not going to push students to plow through something, to discover something, to look at how they think about math so they can move to the next level."

Claudy Chapman
Resident Site Director, Saga Education

Tutor background

Teachers and administrators shared that an ideal tutor would have a bachelor's degree to promote a college-going culture. However, this should not preclude qualified tutors who have yet to earn a degree but are just as capable of teaching grade-level math and engaging students. Programs should also be mindful of the diversity of their tutor corps including the proximity of racial and gender identities, similarities in lived experiences, and geographical background. It is especially powerful when students can see themselves in their tutor. It is also powerful when students can learn from and bond with diverse role models.

INDICATORS

- Tutors have earned, or are on track to earn, an associate or bachelor's degree.
- Program has assessed tutors' mastery of relevant math concepts.
- Across the program, tutors' racial identities and lived experiences both resonate with students and expand their worldview.

Sufficient	**Ideal**
High-school diploma with degree trajectory	Bachelor's degree with instructional experience

Student insights
Tutor rapport + safety

Once students enjoyed and trusted their tutor, it freed them up to be vulnerable about what they didn't know and to lean into challenging work.

"When I started tutoring I felt nervous, like I'm going to fail. That changed the first time I saw my tutor. She is amazing. She makes me laugh; she's funny, kind, and sweet. And at the same time, she knows how to do the math."

Student
Grade 11

Tutor rapport

The tutor-student relationship is the cornerstone of a positive tutoring experience. Through tutoring, students receive personalized support and attention from a caring adult. Research confirms that a caring adult relationship contributes to student thriving and academic achievement.[6, 8] These relationships grow when tutors are a consistent presence in students' lives and can relate to them on a cultural and emotional level. Programs teach evidence-based strategies to help tutors strengthen their relationships with their students.

INDICATORS

- Tutors have a consistent relationship with their students throughout the intervention.
- Tutors are culturally responsive and empathetic.
- Students come to identify their tutor as a caring adult in their lives.

"Imagine what it feels like for a student to have a new person who's invested in them, who's rooting for them, and then they're experiencing efficacy and skill that they hadn't before? They're in the hallway, and the student's saying, 'That's my tutor!' and the tutor proudly says, 'That's my student.'"

Alan Safran
Co-founder and President, Saga Education

Tutor qualities

Programs need mission-driven tutors who love working with students. They must be committed to their students' success and the role it plays in advancing equitable outcomes. Tutors should be open to new ways of teaching, rather than simply adhering to how they learned math. They should exhibit this learning posture through active collaboration with both school and program staff.

INDICATORS

- Tutors care deeply about students and equitable education.
- Tutors are highly relatable to students.
- Tutors are receptive to coaching and new methods of math instruction.
- Tutors collaborate well with program and school staff.

Tutor training

Ongoing training enables tutors to perform at a high level. On entering the program, tutors need training in classroom-aligned math concepts as well as strategies to facilitate an effective session. More importantly, tutors should receive regular observations and coaching from a skilled site director to constantly improve their craft. They should also receive periodic training, ideally from or alongside school staff, on research-based instructional techniques and math pedagogy.

INDICATORS

- Tutors are observed and coached by program staff on a bi-weekly basis.
- Tutors are trained to use the conceptual models and procedures that align with classroom instruction.
- Tutors receive training on a monthly basis from program or school staff on math pedagogy and SEL-informed instructional strategies.

"Every new tutor has a mentor that they work with and are given opportunities for customized, tailored mentorship targeted to specific areas of growth. We have live teaching leads that provide professional development for every live tutor throughout the year."

Audrey Rogers
Bilingual Teacher, Imagine Math

Program staffing

Tutors are the single most important element of a high-quality tutoring program. In other contexts, schools may need to take what volunteers they can, trading off quality and consistency for availability. Effective tutoring programs must be different. Programs need to maintain a paid body of committed and effective tutors through recruitment, regular evaluation and support, and when necessary, dismissal. Programs should avoid engaging unpaid volunteers who aren't incentivized or committed to showing up consistently across the entire year. Programs should also work to grow the diversity across race, gender, shared lived experiences, geographical background, and proximity of their tutoring staff, so more students see themselves reflected in their tutors.

INDICATORS

- Provider maintains tutor quality through active recruitment, hiring, and firing.
- Tutors are program employees, educators, or service corps volunteers with paid, year-long commitments; not temporary volunteers.

CASE STUDY

High-quality tutors are key to the Match tutoring model

Program
Match

Geography
Boston, MA

Grades
9–12

Mike Goldstein spent over 20 years as the founder and CEO, and then trustee, of Match Education. Founded as a high-school, Match became known for its high-dosage tutoring program, which eventually spun off Saga Education. One of the elements that makes Match tutoring effective is a relentless focus on high-quality tutors.

As Mike notes, Match tutors are "carefully selected talent, not commodities." Match, like many other effective tutoring programs, actually rejects most of its applicants. Additionally, the program does not shrink from dismissing a few tutors each year when needed.

Match tutors are also trained by high-quality leaders. Tutor training goes beyond orientation sessions and includes continuous coaching. Tutors receive regular feedback on both their math pedagogy as well as how they are engaging students relationally. Match leaders are intent on providing the coaching and oversight needed to enable tutors to perform at a high level.

Through selective hiring and ongoing coaching, Match developed a tutors corps that not only facilitates effective sessions but that connects with and believes in their students, to great effect.

Driver: School Integration

For a tutoring program to be fully effective, it cannot be an afterschool add-on that is disconnected from the life of the school. Tutoring must be integrated directly into students' daily schedules, in addition to their core math class. This reduces barriers to participation, increasing equitable access and attendance rates.

To achieve this level of integration, tutoring programs require genuine buy-in at all levels. District leadership needs to see the program's value and how it aligns with current initiatives. Principals and teachers must invest in the program by allocating quality space, sharing curriculum resources, collaborating with tutors, and normalizing it with students. Families should also become advocates and partners, sharing valuable background information with tutors, just as tutors share regular updates on students' growth and success. The program's site director plays a central leadership role in facilitating this level of integration between program and school.

PARAMETERS

- Physical space
- Staff collaboration
- Family buy-in
- District buy-in
- Student buy-in
- Staff buy-in
- Site director
- Scheduling

Parameters
School Integration

Physical space

Tutors need ample space to facilitate small group discussions without disturbing other tutoring sessions. This applies to both virtual and in-person tutoring. However, where the tutoring happens is not just a logistical issue. Housing the program in a space that feels just like a classroom signifies its importance to students and minimizes potential stigma.

INDICATORS

- Program has a designated space in the school, on par with a classroom.

Staff collaboration

The more that teachers and students can be informing each other's work, the more effective a program can become. Facilitating this communication is no small challenge, and the site director is crucial in making it happen. Tutors and teachers working in proximity and even passing in the halls can also provide opportunities for connection and communication.

INDICATORS

- Classroom materials are shared with tutors on a regular basis.
- Teachers and tutors share individualized student targets, notable progress, and challenges with each other.

"In terms of tutoring, I'm going to say that for myself, tutor-teacher collaboration has been the biggest factor for the kids I hold dear. If I could recommend that to any teacher, to go and talk to a tutor about their kid, I would."

Raegina Mafnas
7th Grade Math Teacher, United for Success Academy

Student insights
Family buy-in + safety and math identity

Parents wanted to share with tutors about their students, to set them up for successful relationships. They also wanted whatever materials and resources they needed to best support their students at home.

"A tutoring service should be more personalized. The provider shouldn't say, 'Here's what we're gonna do; these are the worksheets that we use.' The program should be student centered. There should be interviews with the students and their families before getting started to gather information on their previous experiences and ideas about math as well as other factors that may impact teacher interaction with the student during lessons. It's important for the tutoring service to understand where these kids are coming from to help them get where they need to go.

An online tutoring service should provide all basic math tools a child would need for the lessons and to use independently. If it's Base 10 blocks, grid paper, fraction bars, printed worksheets or instructions, whatever it is—don't send them a voucher, tell them to print themselves, or find the materials around the house; ship everything directly to them to eliminate potential barriers to a successful lesson."

Parent
Grade 6

Family buy-in

Education research has repeatedly demonstrated that parental engagement, specifically during adolescence, is associated with student success.[5] Tutors can strengthen family engagement by regularly sharing positive reinforcement about students' effort and growth. Programs should just be clear that communication is coming from the tutor and not the teacher. Tutors can also learn invaluable information from families about their students' background and history with math.

INDICATORS

- Program staff learn about their students' background from families
- Program staff regularly communicate progress, success, and issues with families.

District buy-in

As tutoring programs are often more expensive than other interventions, they will likely require both approval and funding from the district. Tutoring programs are also in frequent jeopardy of losing funding which causes disruption in the students' lives when these services are not available. Programs must be able to justify their cost with an evidence-based design. They are also more likely to be sustained and effective if they align with the district's existing priorities.

INDICATORS

- Program aligns with district and school initiatives for math intervention.
- Program has strong evidence of success, or is modeled directly on programs with such evidence.
- Program does not conflict with the collective bargaining agreement.

Student buy-in

Too often, students can feel that their need for tutoring is an indication of failure. This is compounded if students have experienced a system that disproportionately tracks students of color towards remediation. If students enter a program feeling stigmatized, distrustful, or embarrassed, their tutors face an uphill battle. Tutors can minimize stigma with a welcoming, asset-based posture. Teachers can minimize stigma by how authentically they engage with the program. If teachers treat it as a regular and valuable part of school life, students are more likely to do the same.

INDICATORS

- School staff communicate program purpose to students and families to normalize enrollment and minimize stigma.

Staff buy-in

As with any school-based intervention, the more that both leadership and staff are informed and invested, the greater the likelihood of success. Principals must believe the resources and time needed to implement the program are well worth it. Teachers must know which students are being tutored on what, and see the value of collaborating with tutors. The site director can help share the information and develop the relationships that drive this buy-in.

INDICATORS

- Building administrator is an informed advocate for the program.
- Teachers are informed of the schedule, enrollment, and content of the sessions.

Student insights
Student buy-in + math identity

As students took ownership of their learning and experienced success, their confidence increased and it fueled their engagement.

"Over time she just took more and more ownership of her learning. And honestly, that's what it was. It wasn't so much that she didn't understand the concepts... Once she made up her mind that she wanted to be successful, she learned the math. Through our in-depth conversations she was able to become more aware of how much she was learning. This led to her being extremely excited about her progress and success knowing where she started in terms of her mindset and her abilities."

Parent
Grade 6

Site director

The site director is the lynchpin of a tutoring program. Not only do they maintain quality through ongoing tutor training but they are the conduit between teachers and tutors that keeps the scope and sequence aligned. Site directors provide administrative leadership that extends the principal's capacity, and they facilitate the relationships and communication needed for staff buy-in and staff collaboration.

INDICATORS

- Site director observes, coaches, and evaluates tutors.
- Site director facilitates collaboration between teachers and tutors.
- Site director oversees tutor planning and collaborates with school staff to support curriculum alignment.
- Site director collects data for progress monitoring and program evaluation.

"The director is a full-time position at our site. They work with our MTSS team to talk about interventions for students. They are helping at meetings, they're doing observations, they're looking at data. They may pull small groups sometimes. It's like a mini-principal, basically."

LaNitra Curtis
Principal, Aspire Stockton Secondary Academy

Scheduling

Scheduling tutoring during the school day is critical for ensuring student attendance. Before and after-school programs compete with extracurricular activities and battle tardies, absenteeism, and transportation issues, resulting in inequitable access for students. For many successful secondary programs, tutoring is simply a required class in students' schedules. At elementary sites, it might occur during a designated intervention block. It can be challenging to balance the tutoring schedule with electives, but it is also critical that tutoring not supplant students' core instruction.

INDICATORS

- Sessions occur during the school day to ensure attendance and equitable access.
- Sessions do not remove students from core instruction.
- Schedules ensure program staff can join teacher team meetings.

"Even though it seems like you have a wonderful opportunity after school or in summer school, these approaches find that if you can get three-quarters of the kids to come most days, you're doing well. You lose a lot of potential benefit with kids who just aren't showing up. I would absolutely put my bets on tutoring during the day."

Robert E. Slavin
Director, Center for Research and Reform in Education, Johns Hopkins University

Student insights
Scheduling + safety

Students needed help outside of school and were hesitant to ask teachers or tutors, though they valued their knowledge the most. Tutors that reach out and that can be available after hours, can bolster students' support networks.

CASE STUDY

Blueprint aligns with districts and embeds into schools

Program
Blueprint Math Fellows

Geography
Denver, Oakland, East St. Louis

Grades
3–9

Blueprint Math Fellows is a tutoring intervention run by Blueprint Schools Network, a nonprofit dedicated to whole school improvement. When launching Math Fellows in a new district, Blueprint works closely with administration to understand the district's context. For example, some districts show dips in early middle school achievement, while for others, high school algebra is a bigger barrier. Blueprint's regional manager works with district administrators to align the tutoring program with the district's leading priorities.

At the school level, Blueprint fellows are encouraged to take part in school life on top of their duties as tutors. At many of its sites, Blueprint is embedded within the school and tutoring sessions are treated as regular classes. Math fellows attend department meetings and regularly communicate with classroom teachers. In some schools, fellows even have their own homeroom with a set group of advisees for the year. This collaborative relationship is nurtured by the site director and contributes to the effectiveness of Blueprint's program.

Driver: Innovative Technology

The inventive application of technology to tutoring has the potential to reduce program costs while enhancing the experience for students. Blended learning models combine the benefits of adaptive software and tutoring while increasing tutor capacity and lowering cost. Online tutoring increases a program's reach and ability to scale while using interactive tools and thoughtful environments to support student engagement.

These approaches hold promise and should be explored further. However, they must be designed such that all schools and families can participate. Tutoring programs must not perpetuate inequitable access to high-quality educational supports based on existing inequities in access to technology.

PARAMETERS

Digital whiteboard

Blended learning

Online tutoring

Engagement supports

Equitable access

Parameters
Innovative Technology

Digital whiteboard

The digital whiteboard is a key ingredient for effective online tutoring. It provides a shared space where all participants can sketch, solve problems, and visualize content. It also enables tutors to push both prepared and spontaneous content to students, and vice-versa. Tutors are trained to use this tool to increase collaboration and allow students' thinking to drive the conversations.

INDICATORS

- During online sessions, tutors use a digital whiteboard that enables all participants to interact collaboratively with content.
- During online sessions, tutors use a digital whiteboard to push dynamic session content to students.

Blended learning

Blended learning models with adaptive software have the potential to decrease the price per student while supporting personalization and the use of formative assessment. Students can rotate between the software and the tutor, increasing the tutor's capacity. The software can provide students with adaptive, individualized practice and provide the tutor with timely data on what students have mastered and where they need more support.

INDICATORS

- Students rotate between the tutor and high-quality, research-based software, to increase tutor capacity.
- Adaptive software provides tutor with concise, actionable data that informs future sessions.
- Students learn to navigate software with complete independence.
- Tutors and teachers can select content for student practice.

"The two students sitting right in front of me, we're working on an individual lesson. I've got two other students to my left and right working on the computer. That's a new thing for us, and we're still working through the kinks, but it seems to be working really well."

Claudy Chapman
Resident Site Director, Saga Education

Student insights
Online tutoring + safety

Not all peers are safe enough to ask for help. Platforms that can connect peers in safe and mutually supportive ways could expand effective peer networks.

"Asking a friend for help is scary. You know they know it, but if you ask for their help and they tell other people that you didn't know it then everybody will find out."

Student
Grade 6

Online tutoring

Live, online tutoring solutions can be especially important in certain circumstances, such as during the COVID-19 pandemic, but they can also have benefits in the traditional school context. Tutors can be recruited from a larger hiring pool, providing more diverse candidates with the right tutor qualities and language skills to match individual students. This can be especially important for students learning English, as well as students who are underrepresented in their school's teaching staff. Online tutoring may also enable programs to scale, reducing the price per student and providing services to smaller, rural schools. Online tutoring pairs well with blended learning, where data from adaptive practice can inform the session.

INDICATORS

- Program uses online tutoring to lower implementation costs, access a wider tutor pool, and support scale.

"There was an international transfer student who only communicated via Vietnamese Sign Language. Within a couple of days we had a tutor buzzing in twice a week from Vietnam into our California classroom to teach our student English and math via VSL. She's been meeting with her twice a week now for about a year and a half and the girl is just excelling. She's presenting in front of her class and she wants to be a teacher."

Hasan Ali
CEO, Air Tutors

Engagement supports

Effective online tutoring requires a physical environment that reduces distractions and supports students' ability to engage. Onsite staff encourage students, supervise behavior, and resolve any technology issues. Wherever possible, students' access to unrelated apps or other technology distractors should be restricted.

INDICATORS

- During online sessions, onsite staff are present to supervise students and troubleshoot technology.
- During online sessions, student access is restricted to required applications as much as possible.

Equitable access

Lack of equitable access to technology is already widening the opportunity gap. It is crucial that innovative tutoring solutions not exacerbate that trend. All families should be able to access the program, regardless of the technology they have at home. Likewise, all schools should be able to implement the program without a high-bandwidth infrastructure that is beyond their means.

INDICATORS

- Program is not dependent on wifi or device access at home, unless both are provided.
- Software supports mobile devices for any optional access outside of school.
- Program is not dependent on high-bandwidth wifi infrastructure beyond what schools can reasonably provide.

CASE STUDY

Saga Education is expanding access through blended learning and online tutoring

Program
Saga Education

Geography
New York City, Chicago, Washington D.C.

Grades
9–12

Saga Education provides onsite, high-dosage tutoring within several large, urban districts. Recently, Saga has started using technology to innovate their offering.

In Saga's blended learning model, students meet with their tutor in groups of four during regularly scheduled sessions. One pair works with the tutor while the other pair works on ALEKS, an adaptive learning platform. Throughout the session, tutors check-in briefly with the students working on ALEKS. The next day, the pairs will switch. These blended learning sessions have allowed Saga to reduce costs by enabling a larger student-to-tutor ratio while maintaining their impact, as shown in a randomized trial.

In New York and in fall 2020 in Broward County, FL, Saga will conduct online tutoring sessions through a partnership with Woot Math, a provider of research-backed math tools. Woot Math's interactive, online platform—Woot Tutor—allows Saga to keep the student-tutor relationship at its center, fostering collaboration in a shared virtual workspace. Saga's online tutoring opens the door to untapped tutoring talent and extends their reach to more urban school districts and to students in the juvenile justice system.

Driver: Affordable Cost

Very few interventions can boast the amount of research that demonstrates the impact, and thus the value, of tutoring.[10] However, traditional forms of tutoring are also admittedly expensive. This means that historically, one of the most effective forms of intervention has not been made available to the students who need it most.

Effective tutoring implementations leverage small groups and innovative applications of technology to reduce their cost to schools while still maintaining the quality of their program. They also work hard to secure consistent, designated funding that sustains the program from year to year, even when school or district leadership may change.

PARAMETERS

Price per student

Site director caseload

Funding source

Parameters
Affordable Cost

Price per student

When considering a year-long, small group tutoring program with daily sessions for at least 30 minutes each, administrators suggested an upper range of affordability between $600-$1000 per student. However, tutoring provider feedback and current business models suggest that the lowest sustainable price per student might be in the $1200–1400 range. While the price per student is driven largely by **dosage** and **small group** size, inventive applications of technology, including **blended models** and **online tutoring**, may help lower costs while maintaining quality.

INDICATORS

- Program costs between $800 and $1200 per student, per year.

Sufficient	Ideal
$1200	$800 or less

Student insights: Safety
Price per student

Playing math games or doing outside-the-box activities like mathematical art, helped students tap into a sense of joy and creativity that energized them through moments of productive struggle.

Site director caseload

If site directors supervise a single room where each tutor works with four students per class period, room capacity may limit their caseload to around six tutors. Supervision logistics aside, larger caseloads also decrease the frequency of their coaching and increase the number of teachers with whom they must coordinate. However, if programs can distribute supervision, systematize collaboration, and leverage virtual coaching, they may be able to increase the site director caseload and reduce costs, while still preserving quality.

INDICATORS

- Site directors supervise between 4–12 tutors each.

Sufficient	Ideal
12 tutors	4 tutors

Funding source

A tutoring program is not likely to last if its funding is dependent on the tenure of a single leader or a budget line item that is in question every year. Schools and districts that secure designated sources of funding with support from numerous stakeholders will be able to create more sustainable programs.

INDICATORS

- Funding source is designated for math tutoring or intervention.
- Funding source has a high likelihood of consistency from year to year, regardless of leadership turnover.

Sufficient	**Ideal**
Funding from district, state Title 1, and/or corporate or philanthropic sponsorship. Likely to continue year to year, regardless of leadership turnover.	Designated funding from levy, legislature, or federal Title 1/ Title 4. Guaranteed to continue year to year, regardless of leadership turnover.

"We have to find a way to build a lasting political alliance to protect the spending, so that even if the kids are enjoying these huge results, that gain isn't going to be taken away at the first moment there is a change in leadership."

Mike Goldstein
Founder, Match Education in Boston

CASE STUDY

Securing levy funding has sustained Denver Fellows

Program
Denver Fellows

Geography
Denver, CO

Grades
4th, 6th, 9th

In 2011, Denver Public Schools partnered with Blueprint Schools Network to successfully pilot a math fellows program in 7 schools. There were two key moves that have enabled the program to expand and continue operating with sustainable costs for over eight years.

First, the program deployed a 4:1 student/ tutor ratio, nearly halving the price per student compared to a 2:1 model. Even with a higher ratio, the program still showed impressive results on student achievement. Those results fueled the momentum and political will necessary for the second move, which was even more significant.

The year after piloting, DPS successfully passed a mill levy that designated $15.5M specifically for programs like small group tutoring. This created a sustainable funding source for the development of the Denver Fellows program, which Blueprint co-designed with the district and then gradually released over to DPS leadership across the next 3 years. The program has continued to persist even across multiple district leadership transitions, including the superintendent and the executive director of curriculum and instruction.

Opportunity Areas

Opportunity areas

As we stated in the introduction, this profile is a working hypothesis about what drives an effective tutoring program. It's our current best thinking, based on the literature and dozens of conversations with primary stakeholders. And while it represents well what we know right now, it is also a helpful lens for looking towards the future.

Our team has used this profile to reflect on the tutoring market as a whole. We used it to consider the tutoring market leaders, as well as exemplar programs that are still working to address issues of cost and scale. As we combined what we learned from developing the profile with what we learned from applying it to the current market, we formed an opinion about where we see some of the biggest opportunities to advance the field of tutoring.

This section lists six opportunity areas that we believe have the potential to significantly improve the quality, availability, and sustainability of tutoring programs for students who are Black, Latino, and/or experiencing poverty. These areas warrant further research to deepen our understanding, but they are also ripe for innovation. We believe that organizations who can do exemplary work in these areas will contribute greatly to the future of tutoring.

Trust and rapport

We need to better understand how to develop rapport effectively and how to prioritize it in the design of program implementations.

The relationship students build with their tutors appears to be a significant factor in the success of many tutoring programs. As trust and rapport increase, students are more willing to engage in the productive struggle necessary for mastery. This builds their confidence and strengthens their math identity, creating a virtuous cycle.

POTENTIAL RESEARCH QUESTIONS

- What factors contribute most to rapport development between tutors and their students who are Black, Latino, and/or experiencing poverty?
- What impact do high levels of tutor and student rapport have on program outcomes, compared to similar tutoring models that do not optimize for rapport development?
- What are the elements of an effective, scalable training program for tutors that lead to increased rapport development with their students?

Small groups

We need to better understand how to support and deliver effective small group tutoring so that cost-effective, small group tutoring models also provide high levels of impact.

Tutoring in small groups, as opposed to 1:1, is critical for achieving sustainable cost models. It can also increase the quality of instruction if discussion and peer collaboration are facilitated effectively while still attending to personalization. However, facilitating high-quality, small group instruction can be challenging, especially for inexperienced tutors.

POTENTIAL RESEARCH QUESTIONS

- What are the highest-leverage instructional strategies for small groups that support the development of mathematical practices?
- What small group structures are most effective in a tutoring context for balancing peer interactions with individualized support?
- What are the elements of an effective, scalable training program for equipping non-certificated tutors to facilitate high-quality small groups?

Adaptive software and online tutoring

We need to better understand how to integrate and structure these services to create a cohesive offering that is cost-effective, scalable, and high-impact.

Combining adaptive software with online tutoring looks to be a uniquely powerful way to provide scalable, cost-effective tutoring. By alternating between a live tutor and an adaptive platform, programs can decrease cost and increase the number of students served. By using research-based software solutions, programs can ensure the instructional impact of the sessions remains high. And by offering this blended model online, programs can achieve scalability and reach that remain difficult for in-person programs.

POTENTIAL RESEARCH QUESTIONS

- Which research-based, adaptive platforms are most effectively paired with online tutoring?
- What is the optimal dosage balance between adaptive learning and live tutoring for maximizing student achievement and minimizing program cost?
- What are the key elements that enable an online tutoring program to scale sustainably while still attending to tutor-student relationship development and instructional quality?

Tutor pipeline

We need to explore a variety of pathways for creating a substantial tutor pipeline from which a wide variety of providers can staff their programs.

In order to dramatically scale tutoring, we will need to increase the number of high-quality tutors available by one or more orders of magnitude. This will require developing novel and innovative approaches to recruiting and incenting individuals into tutoring roles.

POTENTIAL RESEARCH QUESTIONS

- How might federal employment programs be leveraged to incent students into tutoring while also providing needed job opportunities?
- How might we partner with national service corps organizations to create pathways designed specifically to recruit and staff tutors?
- How might we partner with teacher preparation programs to leverage pre-service teachers as tutors, while also providing meaningful on-the-job teaching experience?
- How might we partner with national organizations to recruit volunteers with the commitment and consistency required for programs to operate effectively?

Online platform

We need to better understand how a well-designed platform can increase the quality of online tutoring and work with partners to develop cost-effective solutions for providers.

As more providers seek to offer online tutoring solutions, the need for software applications designed specifically to support high-quality, online tutoring will only increase. Software capabilities will directly impact an online tutor's ability to facilitate small groups, integrate curriculum, leverage student data, communicate with teachers and families, and so on.

POTENTIAL RESEARCH QUESTIONS

- What are the features of an online tutoring platform that will enable higher-quality tutoring, compared to sessions delivered with the tools currently available?
- What are the incentives and market dynamics that can be leveraged to develop cost-effective solutions and drive adoption across the market?

Funding models

We need to explore both successful and failed funding case studies to develop replicable models and/or programs that enable districts to secure sustainable funding for tutoring.

Securing a sustainable funding source is a major challenge for tutoring providers. There are a few successful examples such as the Denver Public Schools, whose mill levy with designated tutoring funds has sustained the Denver Fellows program for over seven years. However, other funding efforts have not fared as well, such as the federally-funded Supplemental Education Services (SES) program which broadly funded a range of tutoring offerings but saw limited evidence of impact.[14]

POTENTIAL RESEARCH QUESTIONS

- What are the longest-running, high-impact tutoring programs in the country and what aspects of their funding structure might be replicable in other districts and states?
- What can be learned from the SES program and other failed funding efforts about how federal and state funding initiatives might be better designed and implemented?
- What kind of policy advocacy and technical assistance would be required to enable other districts to secure sustainable funding for tutoring?

Appendix

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References

1. Baker, J.D., Rieg, S.A., & Clendaniel, T. (2006). An Investigation of an after School Math Tutoring Program: University Tutors + Elementary Students = A Successful Partnership. Education, 127(2), 287-293.

2. Cohen, P. A., Kulik, J. A., & Kulik, C.-L. C. (1982). Educational Outcomes of Tutoring: A Meta-analysis of Findings. American Educational Research Journal, 19(2), 237-248. https://doi.org/10.3102/00028312019002237

3. Cook, P.J., Dodge, K., Farkas, G., Fryer, Jr., R.G., Guryan, J., Ludwig,J., & Mayer, S. (2015). Not Too Late: Improving Academic Outcomes for Disadvantaged Youth. Northwestern University Institute for Policy Research Working Paper, February 2015.

4. Fryer, R.G., Jr. (2014) Injecting Charter School Best Practices into Traditional Public Schools: Evidence from Field Experiments. Quarterly Journal of Economics, 129(3), 1355-1407.

5. Hill, N. E., & Tyson, D. F. (2009). Parental involvement in middle school: a meta-analytic assessment of the strategies that promote achievement. Developmental psychology, 45(3), 740-763. https://doi.org/10.1037/a0015362

6. Klem, A.M. & Connell, J.P. (2004), Relationships Matter: Linking Teacher Support to Student Engagement and Achievement. Journal of School Health, 74, 262-273. doi:10.1111/j.1746-1561.2004.tb08283.x

7. Mozolic, J., & Shuster, J. (2016) "Community engagement in K-12 tutoring programs: A research-based guide for best practices. Journal of Public Scholarship in Higher Education, 6, 143-160.

8. Murphey, D., Bandy, T., Schmitz, H., & Moore, K.A. (2013). Caring Adults: Important for Positive Child Well-being. Child Trends, Publication #2013-54.

9. Nickow, A., Oreopoulos, P., & Quan, V. (2020). The Impressive Effects of Tutoring on PreK-12 Learning: A Systematic Review and Meta-Analysis of the Experimental Evidence. National Bureau of Economic Research Working Paper No. 27476.

10. Pellegrini, M., Lake, C., Inns, A. & Slavin, R.E. (2018). Effective Programs in Elementary Mathematics: A Best Evidence-Synthesis. SREE.

11. Rothman, T. & Henderson, M. (2011). Do School-Based Tutoring Programs Significantly Improve Student Performance on Standardized Tests?. RMLE Online, 34, 1-10. doi: 10.1080/19404476.2011.11462079.

12. Schueler, B.E., Goodman, J.S., & Deming, D.J. (2017) Can States Take Over and Turn Around School Districts? Evidence from Lawrence, Massachusetts. Educational Evaluation and Policy Analysis, Vol. 39(2), 311-332.

13. TNTP. (2018). The Opportunity Myth: What Students Can Show Us About How School Is Letting Them Down—and How to Fix It. Retrieved from https://tntp.org/assets/documents/TNTP_The-Opportunity-Myth_Web.pdf

14. NCEE. (2012). Impacts of Title I Supplemental Educational Services on Student Achievement. Retrieved from https://ies.ed.gov/ncee/pubs/20124053/

Additional Sources

Aleven, V., McLaughlin, E. A., Glenn, R. A., & Koedinger, K. R. (2017). Instruction based on adaptive learning technologies. In R. E. Mayer & P. Alexander (Eds.), Handbook of research on learning and instruction (2nd ed., pp. 522–560). New York: Routledge.

Allen, A., & Chavkin, N.F. (2004). New Evidence that Tutoring with Community Volunteers Can Help Middle School Students Improve Their Academic Achievement. School Community Journal, 14(2), 7-18.

Bowman-Perrott, L., Davis, H., Vannest, K., Williams, L., Greenwood, C., & Parker, R. (2013). Academic Benefits of Peer Tutoring: A Meta-Analytic Review of Single-Case Research. School Psychology Review, 42(1), 39-55.

Cheshire, A., Ball, L., & Lewis, C. N. (2005). "Self explanation, feedback and the development of analogical reasoning skills: Microgenetic evidence for a metacognitive processing account. In: Proceedings of the Twenty-Second Annual Conference of the Cognitive Science Society, ed. Bara, B. G., Barsalou, L. & Bucciarelli, M., 435–41.

Chi, M. T. H., & Menekse, M. (2015). Dialogue patterns that promote learning. Washington, DC: Socializing intelligence through academic talk and dialogue, 21, 263-274.

Chi, M.T.H., Siler, S.A., Jeong, H., Yamauchi, T., & Hausmann, R.G. (2001). Learning from Human Tutoring. Cognitive Science, 25, 471–533.

Chi, M.T.H. & Wylie, R. (2014). The ICAP Framework: Linking Cognitive Engagement to Active Learning Outcomes. Educational Psychologist, 49(4), 219-243, doi: 10.1080/00461520.2014.965823

Cohen, P. A., Kulik, J. A., & Kulik, C.-L. C. (1982). Educational Outcomes of Tutoring: A Meta-analysis of Findings. American Educational Research Journal, 19(2), 237–248. https://doi.org/10.3102/00028312019002237

Jacob, R.T., Armstrong, C., & Willard, J.A.(2015). "Mobilizing Volunteer Tutors to Improve Student Literacy: Implementation, Impacts, and Costs of the Reading Partners Program." MDRC.

Kulik, J. A., & Fletcher, J. D. (2016). Effectiveness of Intelligent Tutoring Systems: A Meta-Analytic Review. Review of Educational Research, 86(1), 42–78. https://doi.org/10.3102/0034654315581420

Roscoe, R., Walker, E., & Patchan, M.M.(2018). Facilitating Peer Tutoring and Assessment in Intelligent Tutoring Systems. Tutoring and Intelligent Tutoring Systems, 41–68.

Springer, M., Pepper, M., & Ghosh-Dastidar, B. (2014). Supplemental Educational Services and Student Test Score Gains: Evidence from a Large, Urban School District. Journal of Education Finance, 39(4), 370–403. Retrieved July 24, 2020, from www.jstor.org/stable/24459268

Torgerson, et al. (2018). "Tutor Trust: Affordable Primary Tuition." Education Endowment Foundation, Nov 2018.

VanLehh, K. (2011): The Relative Effectiveness of Human Tutoring, Intelligent Tutoring Systems, and Other Tutoring Systems. Educational Psychologist, 46(4), 197–221.

TPP Reflection Guide

The TPP was developed to help investors and providers reflect on all aspects of effective tutoring as they work to design and improve programs.

The TPP is not a checklist. No program will address every single parameter, as there are inherent tensions that can be balanced in different ways. Rather, the TPP is a guide to consider a program's strengths and identify opportunities where innovation might lead to greater impact.

You can use this page to reflect on your program's strengths and opportunity areas within each driver. You can also find a Google Doc version at http://bit.ly/tppreflection.

You can find the complete TPP online at:

http://bit.ly/tutoringtpp

DRIVERS AND PARAMETERS STRENGTHS AND OPPORTUNITY AREAS

Curriculum alignment

- Scope and sequence
- Conceptual understanding
- Personalization
- Priority standards
- Consistent terminology

Data-informed decisions

- Data privacy
- Enrollment
- Program evaluation
- Formative assessment

High-quality sessions

- Session structure
- Session facilitation
- Small groups
- Language
- Enjoyment
- Growth mindset
- Learning tools
- Dosage

High-quality tutors

- Tutor expectations
- Tutor background
- Tutor qualities
- Tutor rapport
- Tutor training
- Program staffing

School integration

- Physical space
- Staff collaboration
- Family buy-in
- District buy-in
- Student buy-in
- Staff buy-in
- Site director
- Scheduling

Innovative Technology

- Digital whiteboard
- Blended learning
- Online tutoring
- Engagement supports
- Equitable access

Affordable cost

- Price per student
- Site director caseload
- Funding source