

Provider and LEA Executive Sponsor Interviews & Coach Listening Sessions Report

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Executive Summary

Overview

The National Implementation Research Network (NIRN), as part of the Effective Implementation Cohort (EIC) investment funded by the Bill and Melinda Gates Foundation, conducted qualitative research to understand the capacity of providers and districts to support effective implementation of high-quality math curricula. Specifically, the EIC team conducted semi-structured interviews and listening sessions with providers, executive Sponsors, and district staff providing instructional coaching. All interviews asked about implementation support, communication, data use and needs to support implementation, and student and teacher impact, including factors that maximize or impede successful implementation, focusing on district factors, team functioning, fit and feasibility, scaling, and sustainability. Methods, key insights, and results from the interviews are summarized below.

Methods

From December 2023 through April 2024, NIRN Implementation Specialists conducted a total of 13 provider interviews across 10 provider organizations representing 18 school districts with a total of 15 participants; 16 executive sponsor interviews across 16 school districts with a total of 19 participants; and 15 coaching listening sessions across 18 school districts with a total of 33 participants. Demographics for the provider, executive Sponsor, and coach participants can be found in Appendix A. The provider, executive sponsor, and coaching listening session semi-structured interview protocols developed by the EIC team consisted of 9 questions, 10 questions, and 11 questions, respectively (see Appendices B, C, and D). Each interview lasted 45-60 minutes. NIRN Implementation Specialists audio-recorded the interviews and took notes as interviewees spoke. The qualitative analysis team used Rev.com to transcribe interviews.

Two data team members used NVivo software to code data. One analyst coded the executive sponsor and provider interviews, while the other analyst coded the coach interviews. After coding these initial interviews, the qualitative analysis team met to add new sub-themes to the codebook. Results were reviewed by a senior implementation researcher for consistency and interpretation.

Key Findings

Implementation Facilitators

Executive sponsors, providers, and coaches identified commitment to resources and time, as well as consistent messaging, a clear vision for the work, and an implementation plan translating this vision in practice as significant facilitators of implementation. Executive sponsors also emphasized the importance of communicating with all critical perspectives (including families/caregivers) to build conceptual understanding of the curriculum, and the need to engage administrators in the work. Other noted

facilitators were access to professional learning around instructional practices fostering student learning and engagement (provider-identified), one-on-one coaching with modeling for teachers (coach-identified), teacher buy-in and support (coach-identified), and the need for accountability (coach-identified).

Implementation Barriers

Among the implementation barriers recognized by all three groups of interviewees were teacher turnover, leadership transitions, and teachers' resistance to change their practice to align with the curriculum. Executive sponsors also noted the inability to promote the curriculum or engage in the work by school leaders and administrators, and limited financial resources, hindering successful implementation. Coaches added student mobility, initiative fatigue, and the voluntary nature of professional development as critical implementation challenges.

Supports and Practices

Executive sponsors received assistance from the providers, who supported them by "filling the gap," offering professional learning (PL) opportunities, resources, and coaching, where needed. Providers with executive leadership sponsorship provided by the executive sponsors included one-on-one coaching and PL opportunities for the teachers. Providers identified one support strategy package, a multi-layered approach to capacity building, that included one-on-one coaching for teachers and a coherent system of professional learning for all, as helping with curriculum buy-in and implementation fidelity. Coaches voiced appreciation for the support provided by the partners, whether in the form of PL, collaboration with other coaches, or as thought partners. When providing assistance, coaches were particularly attuned to the need to increase teacher buy-in to encourage willingness to change practices in the classroom. They identified direct one-on-one in-classroom coaching and direct observations of other classrooms as the best strategies to help teachers.

Impact

The impact of the math curriculum implementation on both teachers and students was noted by the executive sponsors, providers, and coaches. According to providers, districts noted gains in student classroom engagement, math enjoyment, and growth mindset through anecdotal evidence, but not consistently through assessment data. Executive sponsors and coaches also reported that student engagement in classrooms and student math self-efficacy had increased because of the teacher's ability to establish positive emotional connections and willingness to try new pedagogies, including supporting conversational learning. The impact on teachers was reflected through changes in mindsets, from teacher-centered to student-centered classrooms.

Data

Executive sponsors and providers reported being more intentional with data methods and measures to ensure alignment with needs and goals. Executive sponsors emphasized the usefulness of Plan-Do-Study-Act (PDSA) or data review cycles to make decisions on how to improve support, streamline communication, and increase understanding. Providers still highlighted student outcomes and capacity assessments as the most useful sources of data. Coaches reported utilizing different data this year, especially student survey data and teacher observation data, to better understand what is happening in classrooms. Overabundance of data remains a barrier to meaningful and prioritized analysis. Remaining data needs include: access to comparative data that allows assessment of the initiative effectiveness, particularly with respect to student achievement (coach-identified); and expansion of data collection systems to further incorporate student feedback and capture student motivation (executive sponsor-identified).

Spread and Sustainability

Executive sponsors who clearly communicated and formed relationships with district members to gain system-wide buy-in to the curriculum reported an increase in the number of classrooms implementing the curriculum. Providers noted that buy-in and scaling were impacted by whether the curriculum adoption was an opt-in decision and by the level of resistance to change. Successful scaling was also believed to be influenced by contextual factors, such as teacher vacancy and virtual learning classrooms, availability of resources, diversity of leadership, and student populations across schools.

When asked about the sustainability of efforts beyond the grant cycle, most coaches believed that the use of the curriculum would continue, but whether things such as changed teacher pedagogical practices would continue was likely to vary. Many believed that more time with continued support to help teachers learn the curriculum and change practices was needed to ensure that grant-supported changes would be sustained.

Lessons Learned

Communication: Establishing and maintaining clear communications across all critical perspectives (e.g., students, families/caregivers, school boards, district leaders, teacher unions) to ensure buy-in and successful uptake remains a critical lesson learned. Executive sponsors and providers noted the importance of having a communication lead for managing and streamlining all messaging. Coaches commented on the need for messaging to be crafted across critical perspectives groups and provided in multiple forms for a diversity of audiences.

Fit and Feasibility: To ensure fit and feasibility, executive sponsors and providers recommended to include the districts and teachers as part of the discussions and decision making process when adopting a new curriculum. The curriculum should align with their vision for high-quality instruction based on the students they serve. Once the curriculum has been adopted, teachers need to be supported with day-to-day delivery of the curriculum in practice. Coaches noted the need to build teachers' capacity both conceptually and from a pedagogical perspective.

Team Functioning: District teams that functioned well had a shared vision, were mission-aligned, set clear expectations for roles and responsibilities, problem-solved together, and celebrated successes. They also had a champion, who coordinated and led the team. While district teams are important to the success of the work, so are well-functioning teacher teams; teachers will move the curriculum forward. The capacity to navigate politics and demonstrating respect for chains of commands and boundaries were highlighted as important learnings for successful implementation among providers. Multiple coaches also noted that for teams to function well, the providers need to understand the schools, districts, and states, and work to meet their needs.

Provider Interview Results

Key Insights

- **Providers identified (1) dedicated time, sufficient resources, and appropriate staffing; (2) a clear vision among district teams and critical perspectives; and (3) professional learning around instructional practices that foster student learning and engagement, as factors that facilitated successful implementation.** With implementation of the new student-centered math curriculums, teachers benefited from additional support from leadership to encourage student discourse and classroom engagement.
- **Teacher turnover and leadership transition exacerbates the already limited capacity of district leaders and teachers to dedicate time and resources to implementation.** District factors, such as weak boards of education, geographic location, and size contributed to low levels of resources and work-related strains that impacted implementation.
- **Providers identified one support strategy, a multi-layered approach to capacity building, was particularly useful and helped with curriculum buy-in and implementation fidelity.** Establishing a coherent system of professional learning for teachers, coaches, and administrators was another important aspect of effective support. Providers initiated one-on-one coaching sessions with lead coaches, which in turn helped with curriculum buy-in from teachers. In contrast, teachers and administrators did not engage as expected in provider-led professional learning opportunities.
- **Districts noted gains in student classroom engagement, math enjoyment, and growth mindset through anecdotal evidence, but not through assessment data.** Impact of the math curriculum on student math self-efficacy was variable depending on the district. The impact on teachers was reflected through changes from teacher-centered to student-centered classrooms.
- **Providers have been more intentional with creating data methods and measures that align with needs and goals. The usefulness of the data collected continues to vary.** While they noted student outcome data and district capacity assessments as the most useful data sources, they continued to highlight the overabundance of data as a barrier to in-depth analyses.
- **Providers believed that scaling is influenced by whether the curriculum is an opt-in decision for schools, as well as by resistance to change.** District geographic factors, such as availability of resources and diversity of leadership and student populations across schools, also impacted successful scaling.
- Among lessons learned, **providers noted the importance of maintaining communications loops among key critical perspectives, like students, families/caregivers and school boards and leaders, to facilitate implementation.** Providers also discussed the importance of districts choosing a curriculum that fits their vision for high-quality instruction and best serves what their

students need, as well as supporting teachers with unit planning and building their content knowledge.

- ***Providers maintained healthy communication channels with the social leaders among district teams to support implementation buy-in.*** Additionally, implementation teams that functioned well had someone coordinate and lead team members at the district level. *Well-functioning teacher teams also move forward curriculum implementation. Finally, providers recognized the importance of respecting district teams' boundaries and chains of command.*
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Implementation

Implementation Facilitators

Providers identified many factors that maximize successful implementation, such as districts having enough resources, people at all levels, and time allocated to implementation.

"The other thing that's important is resource alignment, specifically of time and people, at all levels... It's necessary to have resources, people and time, allocated to this work. Otherwise, there's just a lot to do and it just won't get done."

"Capacity-building's an important resource allocation piece, is a lot of the schools that we've been serving, especially those that have the highest populations of high-needs students have new leaders."

Districts function better when they allocate time and resources to support ongoing professional learning opportunities and capacity building of not just teachers, but also lead coaches and principals.

"The last thing is ongoing development and capacity-building of people who have to make the changes, not just teachers, ... but people at all levels including leaders, principal managers, principals, etc."

"To really make that change and make it sticky, people need help. They need time to learn in really meaningful ways. So a coherent system of professional development that accounts for learning, not just of teachers in the classroom, but folks across the board. And I learned about that because I saw when we didn't do it, what happened. People either gave up or didn't know that they weren't doing it right or what have you. So a tight system around that is important."

Providers noted the importance of establishing a clear, shared vision among district teams and different critical perspectives and providing support to implement that vision through professional learning.

"Another thing that I would say in [district] that I feel like I've learned is the importance of having a really strong vision that has been co-created and taken up by many different stakeholders."

“Factors that maximize implementation success when it comes to the use of [curriculum] is the coordination of key stakeholders, that being external providers, district regional leaders, and school leaders and teachers. I think the coordination across those stakeholders in terms of vision, expectations helps for it to be a success to start.”

“Without a clear vision to start with and then clear structures of support, it's difficult to see any success with implementation.”

“Having a shared vision from the executive leadership down to the teachers and them sharing that vision for, say, in the beginning of this school year. I think that was helpful before the PL that we led, because it helped make sure everybody was on the same page. And then also, as a result, I think the PL was received very well because people knew the why and why they were being involved and why they were a part of this curriculum implementation.”

Providers also identified teachers' and leaders' educational values as an important factor to consider in the implementation of the curriculum. Teachers and leaders who believe in and use practices that encourage student engagement were more likely to successfully embrace the curriculum. Providers worked with school leaders and teachers to identify instructional practices and strategies that fostered student learning and engagement.

“Using high-level tasks, learner-centered routines, connecting representations, and productive use of Spanish led to greater student learning and engagement. Teachers who believe in and use these practices have students who are doing better academically.”

“We worked with districts to identify tasks and sequences that allowed for student thinking, authorship, and conceptual understanding before procedures. [District] stuck closely to our identified tasks and sequence, so it was effective for them. Other districts changed scope/sequence, so it was harder to use our identified tasks.”

“We've seen a lot more student engagement, like student to student engagement, a lot more discussion. I think that's really been an area that we're focusing on with teachers, creating environments in the classroom where students can really grapple and talk to each other and problem solve and not have it be that ping pong kind of style instruction.”

“We're seeing definitely more student interaction, but also it's been a work in progress because we're noticing a little bit of hesitation, this fear of, “I don't want to get it wrong, I don't know if it's right. And so a lot of the strategies we're working on with teachers is helping them to cultivate those conversations and build ideas instead of it being like, “Oh, that response is wrong. Moving on,” wanting to really engage students and what they do know and how to meet them where they're at to build that discussion within the class.”

“Because the curriculum is very student-centered, it has opened the eyes of leaders to see that it shouldn't be teacher-centered. So when we do our indicators, when we do our classroom walkthroughs, that's one of our focuses is around content engagement and what does it look like from students and what does it look like for teachers in order to bring the students into that engagement piece. So with our indicators and the leaders understanding the indicators, we've seen a big shift in just the conversation from leadership around what should student discourse be in our schools. It was not that way three years ago.”

Implementation Barriers

Providers identified many barriers that impede implementation, including **the limited capacity of district leaders and teachers to dedicate time and resources to implementation, which is exacerbated by teacher turnover and leadership transitions.**

“A lot of the schools that we're serving, especially those with the populations that we're trying to target through this project, have very new leaders or a lot of leadership transitions, and they don't yet have the skill or wherewithal to prioritize as district initiatives come down.”

“The low capacity of building leaders and of teachers, a lot of new teachers have entered the profession, has made it especially challenging to do this work.”

“Leader turnover as well, not just teachers, but just making sure that we're able to keep the sustained message across the board no matter how much turnover we have and being able to support those leaders in how do they message the vision and ongoing and just continuing the work.”

District factors, such as weak boards of education and geographic location and size contributed to low levels of resources and work-related strains that district leaders and teachers experience.

“[State] has a pretty weak board of education and not a lot of strong, incentivized guidance around curriculum up until the new framework was passed. And I think for that reason, that general attitude towards curriculum in the district is one of viewing it as a resource rather than as an actual strategic lever for change. So I think the culture of the state played a role in that being really important.”

“They're a small district, so that has impacted how they've been able to move through the stages of implementation because they've had to go back to the very beginning with several of the schools because they've had all brand new teachers coming in.”

A second implementation challenge reported by providers was the mismanagement of time and resources related to professional learning activities. Some districts spent substantial time planning professional learning sessions with low staff turnout.

“There's some ways that that team has not been utilized in the best possible ways to support the implementation of this particular curriculum...They're being asked to

organize professional development. They spend a lot of their time planning these big PD days and I think that's not necessarily a great use of their time."

"The thing about PD... is when it's optional and it's offered at one time a month or one time or whatever, it's so hit or miss who is physically able to attend at that time."

"[District] is doing all of the work to design and deliver PD to a tiny number of teachers who show up to these optional PDs, that has felt like a big drain in energy and time. And it does build the capacity of whoever is co-designing with us, the coaches who are responsible for those PDs, and they're learning from that process. But in terms of touching teachers, it's like the cost-benefit analysis. It's such a small number of teachers that show up consistently enough."

"These district coordinated PDs are for everyone in the district, everyone's invited, but then it's completely optional. It's not a community-building, community-generating experience."

"There's something about bringing them together that feels like a strain rather than an accelerant."

As part of this challenge, district leaders' budgetary and staffing decisions influenced the amount of funds made available for professional learning and new staffing support.

"It's partly in response to budgetary decisions, but they're also saying that it's about restructuring the district's relationship with sites and trying to create a new way of business. But I think that... and so that's just... this project has been impacted by the ways that leaders in the district have been making decisions around support staff, around dollars that are made available for professional development, and around how the new leader of the math department is supported to continue to implement the three to five-year plan that's been put in place."

Finally, providers recognized challenges in establishing quality district implementation teams, as some team members were not present at implementation team meetings, did not spread the word on implementation, or could not find skilled coaches to support teachers.

"The district building implementation teams not being present has been a barrier."

"Establishing those building teams to really spread the word. They're still trying to hold it with a very small team and very much control of it. You need those building teams to lead that workforce to continue."

"It was very difficult to find someone who had the skills needed to coach teachers. We really only had one candidate that we even felt was quality enough to go through to a second interview. So it was very tough to find people with the background needed in that area."

Implementation Supports

Providers noted that building layers of support, such as offering more assistance to lead coaches or teachers in each school, help with curriculum buy-in and implementation fidelity.

“The most helpful services that we've provided have been providing coaching support to [lead coach]. Creating a space where she can talk about and refine her coaching skills.”

“Just being this consistent resource for the instructional routines built into the curriculum. Just being available to answer questions, plan PD, plan coaching around those routines in whatever form the coaches need or teachers need. It's also been a lot of working with coaches who are going to be modeling those routines in the rooms, observing the routines, and then giving feedback to the teachers and to the coaches.”

“The most helpful thing, it has been similar to [district], creating a learning space for [name], the main coach, and the other coaches in the district. But creating a learning relationship where, again, we're a resource for her to tap with any of those instructional routines. We can help create slides that she's using with teachers. We can give feedback on all the resources that she's developing for teachers. Just co-designer, planner, co-planner, and just thought partner with [lead coach] around supporting teachers to use and understand the routines.”

“With the more gradual spread and buy-in within the teachers in the building, it might've helped with more implementation with fidelity. Like we got compliance, where everyone was using it, after they switched everyone using it. But maybe building in those lab leaders with that layer of support in the buildings might've helped it be more of a buy-in, where teachers were teaching the curriculum with fidelity, just because they had that, in addition to the PL, they would've had that support, too, to help implement the PL, or implement the lessons and things in their classroom.”

Establishing a coherent system of professional learning for teachers, coaches, and administrators was another important aspect of effective support.

“A coherent system of professional development that accounts for learning, not just of teachers in the classroom, but folks across the board.”

“How do we support the principals with all the needs that are there because it's not just curriculum implementation, it's content knowledge, it's the self-efficacy to do the work.”

“They were looking for content support, so we started off with [provider], having them... some of the things they can start with to help them build their own understanding of content. So I think that was something that they found helpful, or a benefit for them, to just say, like I said, someone that they could ask questions as they felt like it was so new.”

Some of the least effective support provided included professional learning with principals and teachers due to low turnout and overall impact.

“What was least helpful maybe was some of the PD that we’ve tried to do with group PD with principals, partially because we haven’t unlocked yet how to really make that fit coherently with all of the other learning that principals are getting in group settings.”

“The least effective has been when we’ve tried to provide professional development like teacher-facing or teacher-directed professional development.”

“There was always only three or four people who showed up. So, it just wasn’t, effective maybe isn’t the right word. It just wasn’t really a good... the cost-benefit analysis was off. We could have spent that time individually meeting with teachers, and it would’ve been probably more impactful. Because it’s time to plan and then you’re sitting on this Zoom and no one shows up, and it’s like an hour and a half, or not no one, but you know?”

Impact of Math Curriculum Implementation

Teacher Impact

According to providers, with implementation of the new student-centered math curriculums, teachers benefited from additional support from leadership to encourage student discourse and classroom engagement.

“Because the curriculum is very student-centered, it has opened the eyes of leaders to see that it shouldn’t be teacher-centered. So when we do our indicators, when we do our classroom walkthroughs, that’s one of our focuses is around content engagement and what does it look like from students and what does it look like for teachers in order to bring the students into that engagement piece. So with our indicators and the leaders understanding the indicators, we’ve seen a big shift in just the conversation from leadership around what should student discourse be in our schools. It was not that way three years ago.”

“They are all about student discourse, like the conversations that the administrators are having around student discourse and our focus when we go into classrooms of making sure the teacher is facilitator instead of standing up front and center, being the one to lead them through the learning.”

“Some of the observations that we’ve done for sure, we’ve seen a lot more student engagement, like student to student engagement, a lot more discussion. I think that’s really been an area that we’re focusing on with teachers, creating environments in the classroom where students can really grapple and talk to each other and problem solve and not have it be that ping pong kind of style instruction. But I also think that that is kind of not new, but it’s something that I think students were really apprehensive to engage in at the jump too.”

Student Impact

Impact of the math curriculum on student math self-efficacy was variable depending on the district.

“We saw the largest gains in self-efficacy. That’s an internal survey for us... 7 in 10 students agree that they believe that they can learn the material in their math class and be successful in the role. And so I think that’s one piece of data that particularly stands out.”

“We did see some improvement in some of those indicators, but it wasn’t a significant amount where we felt it was enough movement or that the sample was large enough to be reflective, or to really tell us enough.”

Districts noted gains in student classroom engagement, math enjoyment, and growth mindset through anecdotal evidence, but not through assessment data.

“What I’m seeing in the classrooms when I’m doing those walkthroughs, I see a difference in the years that I was in this district in my former role and now what I’m seeing from students and their own discourse and joy of even fighting over a math problem. So that’s fun.”

“Given the surveys that we’ve seen, we haven’t seen a big shift in our data. But when you talk to kids in classrooms that are doing it well, they like math and they like the challenges. So I think there’s anecdotal data that it’s improving, but we haven’t yet seen it at scale.”

“We’re seeing more student-centered classrooms through our observations, but that hasn’t yet fully manifested in outsized student gains or achievement gains on end-of-year assessments.”

Data

Data Use Improvements

Providers played an essential role in coordinating with districts to collect and share data and make data-based decisions. Some providers noted shifts in how they leveraged funds to offer stipends to teachers to collect more teacher and student data.

“The coordination that we did with the district and regions to aggregate, collect, and regularly use data to try to make decisions together. Had we not done that, they would know nothing about what is happening with [curriculum].”

“This year we made some shifts in how we were leveraging our pass-through funds to be able to offer stipends related to teacher data... Having the stipend be tied to student artifact submissions was huge this year. I mean, we are probably going to collect over 700 pieces of student work this year, which is unbelievable.”

To improve supports related to data collection and sharing, providers made some changes over the

past year, including creating processes for walkthroughs, automation, and data dashboards.

“Because of some of the automation we did, we've been able to do it more frequently and also be more dynamic with the disaggregations that we have.”

“Dashboards for our small team that at least for those two pieces, allow us to pull graphs up more dynamically and use them one-on-one with schools more frequently in PD, and then also share it back more often with the district team. So some investment in skill and building out some resources has been helpful.”

“We've improved our data infrastructures in lots of ways. The ways in which we're able to break it down, we have internal dashboards that's helped with things like coaching. Our internal dashboard has helped with our step back from professional learning. We've invested a lot of people, support into our internal systems and that's been helpful.”

“If you can have an agreed upon tool and process for walkthroughs, it just supports a much richer conversation and a much richer understanding of what is happening that's good and where support is needed.”

Providers have been more intentional about aligning implementation goals with valid measures, such as using curriculum assessments and monitoring the progress of implementation plans.

“We've been really intentional of what goals have been set and what are we using to measure that, so looking at the different things that we've had through EIC or anything that they have with their curriculum. They have the [curriculum] assessments, and how do those align with our goals? And if we have things that we don't have a goal with, we actually added a goal to focus on. The measurement of the district team since they have such an impact on this work, we wanted to measure their impact as well across everything that was happening in the schools.”

“So looking at our goals, looking at their action steps and informing from those goals what data source is supporting that to think about how are we moving towards meeting that full goal. And so by us having that progress monitoring tool and doing it three times a year, it's helping us further to get to the end of the year when we go back and look at our implementation plan as a whole and see where we are.”

Remaining Data Needs

Providers recognized that the usefulness of the data collected continues to vary. While they noted student outcome data and district capacity assessments as the most useful data sources, they continued to highlight the overabundance of data as a barrier to in-depth analyses, as well as the need to collect fidelity data.

“There's a lot of going through the motions around collecting the data that we were supposed to be collecting because the grant was like, you need to have fidelity data. You need teacher survey, student survey, dah, dah. So, all those things were happening, but the usefulness of that data, the impact of that data varies a lot.”

"I think that the DCA results have been very helpful for [district] in thinking about prioritizing communication plans. I have seen the response to the DCA results. So, that's one piece of data direct from NIRN that has informed priorities in the district. I can't say for sure exactly directly connecting decisions or priorities, but for sure, I've seen it in the conversations have an impact."

"We've had so much data that we're pulling from them and giving to them that it's been hard to truly unpack all of the impact of it. So just survey overload for us has been a barrier... I would've liked to see more data around looking at assessment data in relation to the work that we've done. So really digging into are we truly seeing that, the student outcome data... There was just so much out there that we were forgetting to bring it all together to focus in on are we actually getting our goals to where we want them to be"

Some providers wished they had shared analyzed data and visualizations with district teams and facilitated conversations around the implications of the data for implementation.

"Even the student surveys and the teacher surveys that we give, and we have all that raw data, it's just cleaning it and then processing it and making sense of it, analyzing it themselves is overwhelming. So, having that, in some way, given back to them, being like, 'Look, these are the student outcomes from one year to year, or this is the student survey. And this was a question that trended upwards or trended downwards,' are just things that teachers are saying based on their teacher survey results. So, I think that that would have been and maybe still will be helpful."

"If there had been visualizations of data sprinkled in at different key points, I wonder if we could have used that more directly in our partnership work, in the conversations we were having."

Scaling

When asked about factors that drive the decision to increase or decrease the number of schools and classrooms implementing the curriculum, providers believed that scaling is influenced by whether the curriculum is an opt-in decision for schools, as well as by resistance to change.

"The one thing that we've voiced year after year is the fact that it's opt-in right now, has been one of the biggest barriers because it just doesn't allow for consistency. So add on top of that teacher and leader turnover or shifting. So it's a very inconsistent group of people that are participating over the course of the three years. And so the ability to scale and spread is difficult in that sense."

"It's just really hard. There are over 150 schools using [curriculum] all in different places. And we're focused on middle grades, but they're... Sorry, that 150 is middle and high school. So there's a lot of gaps in the system where people haven't been given the wraparound supports they need to make the change. And forcing people to change... This curriculum is not an easy one to use, and forcing people to make the change out of necessity is a... Schools have not strategically built the buy-in that they

need from their staff to make this successful.”

District geographic factors, such as availability of resources and diversity of leadership and student populations across schools, also impeded scaling.

“The spread and sprawl of the district requires that you need more people to serve schools at scale, which makes it more expensive, and then therefore makes it harder. I think there's maybe a ratio. We've been talking to folks about what's the right coaching ratio of schools to people or whatever. And I think there's things to learn from other places, but the literal time spent in a car limits how much work you can do. And I feel like that's probably also true sometimes in rural places as well. I don't know. Just spread out.”

“The size and magnitude and the distinctions of regions and what that means for the type of leadership or the type of the student population and all of the differences that happen because it's such a large district, I do think that's presented some challenges to change management and implementing [the curriculum].”

Providers recognized that a stage-based approach to scaling is important, as well as intentionally engaging and supporting teachers in the first year of implementation.

“It's really hard to do at scale. So a stage-based approach to scaling is probably really important so that you can be sure that the people who start first get really good at it and are advocates and build momentum around it.”

“To do this at scale, we need to really, especially in that first year, wrap our arms around our teachers and really help them make the changes that these things might call for.”

“If we had to do it again, it would be more about intentional engagement of teaching staff with the decisions so that they're really bought in and understand why it is the best choice, and then making sure that we're scaling at a pace that is not driven by budget like we can have these many more people, but actually is driven by prioritization of people in time, like we can financially support this and then we can literally support it.”

“I think it's important the larger you scale to make sure that you have systems and supports that scale with it as well.”

Provider Lessons Learned

Communication

Providers noted the importance of maintaining communication loops among key critical perspectives, like students, families/caregivers, and school boards and leaders, to facilitate implementation.

"I think parents and stakeholders, we really intended to do some focused work around that in [district] in particular. And I don't know how much that impacted things, but just talking to families, talking to parents, including them in the communication loops, listening to them."

"There was improvement throughout the course of the project of [executive sponsors] communicating the key points of the project and progress to high-level stakeholders, like the board or the superintendent. And that, I think, yeah, definitely was an improvement, and I think is a strong practice that will hopefully help sustain these kinds of initiatives."

"Communication has to happen across all areas, even to the students. So, "Here's the curriculum that we're using. Here's why we're using it. Here's the intentions of the instructional routines and why we want to use them with students."

Providers noted the importance and associated challenges of district teams using the same language and consistent messaging about the curriculum.

"Consistent messaging across the board, consistency in general. So making sure that this is not just a conversation when we're having a sponsor driver meeting or a district implementation team meeting or having our walkthroughs at a school or our professional learning, but this is what happens every single day."

"People need clarity around who's doing the work to support implementation, but then also what that work looks like really plainly, and then the impact of the work."

"Curriculum implementation is always feasible if you have coherence and clarity around vision across key stakeholders. Everybody's talking the same language."

Some Providers recognized the need to improve their communications with district teams and clarify expectations of roles.

"Lessons learned over communication probably would be better for them just to make sure that we're clear, because there were things I think sometimes where we felt like it was communicated or like... but it didn't get received in that way. So just make sure that sometimes you over-communicate to make sure that it lands in the way that it needs to."

"There were things that could probably have happened a lot sooner, but because of the, I think self-imposed barriers, sometimes it took a lot longer to get some things done than it should have... I think sometimes not toeing the line around, well, no, this is our expectation or no, in order to move the work, here's what needs to happen. We experienced unneeded barriers for longer amounts of time."

Fit and Feasibility

Providers discussed the importance of districts choosing a curriculum that fits their vision for high-quality instruction and best serves what their students need, as well as supporting teachers with unit planning and building their content knowledge.

"It's all around what their vision for high-quality instruction is. Really making sure that they're digging into the why behind what they want to use instead of just picking something because it's easy to use. They really dug into that to really think about, "Is this what our students need?" They have a large multilingual population."

"You can't just be like, "I'm going to teach a curriculum," and suddenly every kid learns. You have to work really hard to implement it well. And again, just know about the beliefs of good math teaching. So I think [curriculum] is one of the strongest curriculums I've ever seen that aligns with that. So I think it is a really good fit. And I think that while there is a lot of space in [curriculum] to teach you the content, you do have to have really good content knowledge in order to implement it well. And I think that comes with experience and time. I think it's important to know when you implement [curriculum] that you have to put in the time to really do those unit planning with teachers so that they can understand how the lessons build over time, how the standard builds over time, what is the ultimate understanding kids need to get."

Team Functioning

Providers maintained healthy communication channels with the social leaders among district teams to support implementation buy-in.

"Key takeaway is that maintaining a connection and a healthy communication channel with the social leaders among the teachers is really, really helpful. So, there are kind of the influencers in the district and at each site. And if you can stay connected to those people, then you're going to have a healthy partnership."

"It's just been the communication across all stakeholders, working with the district team, making sure that our sponsors or the assistant superintendent and everybody involved with supporting math at the district level, and then everybody supporting principals and everybody supporting coaches."

Additionally, implementation teams that functioned well had someone coordinate and lead team members at the district-level.

"I don't think our team would function as well if it didn't have someone at the helm who had the skill of not only being able to have proximity to the work and be a good person in terms of relationships, but also to synthesize the ideas and the thoughts and the actions that are coming out of the discussions we're having."

"The biggest thing around team functioning is having someone to coordinate all the people."

Well-functioning teacher teams also move forward curriculum implementation.

“When teachers are interacting with each other around their experience with the curriculum, that kind of motivates sticking with it, trying it, even if it's clunky at first or if it feels like it's not working.”

“If the teachers see the support structures that they have from the district, it's changing the work that we've seen.”

Finally, providers recognized the importance of respecting district teams' boundaries and chains of command.

“[In regards to team functioning,] the importance of respecting the chain of command. I'm a violator, so I learn too often how important that is.”

Executive Sponsor Interview Results

Key Insights

- **Executive sponsors identified (1) establishing a clear implementation plan with identified roles; (2) communicating with teachers, families/caregivers, and other critical perspectives groups to build their conceptual understanding of the new curriculum; and (3) engaging administrators in implementation work, as factors that maximized successful implementation.**
 - **Executive sponsors identified principals' and other school leaders' inability to promote the curriculum as a barrier that impeded implementation.** District factors, such as increased workload, impacts principals' and leaders' ability to dedicate time to support the curriculum implementation.
 - **Executive sponsors worked to find new allies to support implementation work with each leadership change as leadership transitions also pose a barrier to implementation.** Strains on financial resources due to school budget changes posed additional challenges, such as districts not being able to fund coaches or purchase curriculum materials.
 - **Executive sponsors facilitated access of supports to teachers by ensuring one-on-one coaching and professional learning training.** District factors, such as teacher retention and rural vs. urban school districts impacted the effectiveness of executive sponsor-provided support to teachers.
 - **Many executive sponsors reported that student math self-efficacy and confidence have increased because of the curriculum and teachers engaging students in small groups and establishing a positive emotional connection with students.** Executive sponsors also reported that increases in student engagement resulted in changes in student appreciation of math.
 - **Executive sponsors used teacher and district team survey data to make decisions on how to improve the support provided.** Executive sponsors used Plan-Do-Study-Act (PDSA) or "data chat" cycles to streamline communications around data usage and increase understanding among teachers and administrators. Executive sponsors want to expand data collection systems and support to further incorporate student feedback and capture student motivation.
 - **Executive sponsors who clearly communicated and formed relationships with district members to gain system-wide buy-in to the curriculum reported an increase in the number of classrooms implementing the curriculum.** Some school conditions, such as teacher vacancy and virtual learning classrooms, led to a decrease in the number of classrooms implementing the curriculum.
 - **Among lessons learned, executive sponsors noted the importance of communicating with board members, teacher unions, and families/caregivers on the progress implementation teams are making.** Some executive sponsors found it helpful to appoint a team member to manage and streamline all communications.
 - **Finally, executive sponsors had positive relationships with providers and described providers as thorough, responsive, and trustworthy.** District teams that functioned well set clear expectations around roles for team members, and problem-solved and celebrated success together.
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Implementation

Implementation Facilitators

Executive sponsors identified having a clear implementation plan with identified roles and responsibilities as a factor that maximizes successful implementation. Executive sponsors noted the importance of including representatives to lift up diverse student needs.

“The factors that maximize the successful implementation would definitely be a clear, laid out plan prior to starting the implementation, and also, really identifying the roles, and who is responsible for which aspect of it.”

“Representation matters in terms of who's sitting on that improvement team. And so just deep conscientiousness around our students with exceptional needs, our emerging bilingual students even, or just any multilingual student in their experiences, folks working directly with our principals, et cetera.”

Executive sponsors identified establishing clear and consistent communication channels between themselves, teachers, and other community partners as another facilitator of implementation.

“It's like what are we communicating? Who are we communicating to? And having a clear expectation of how often we're communicating. So then we were all serving the same purpose, right? It's like we're not over communicating. We're not saying incorrect information to people, but we're kind of supporting one another with communications of different stakeholders.”

“I'm trying to stay on point and to say my responsibility is to communicate weekly to the principals, to the chief, so on. When I go in the business, I have to make sure that teachers are getting the feedback. So we have solidified some of the ways and some of the people and how often we need to communicate different things to people.”

Executive sponsors worked to build teachers', families/caregivers', and critical perspectives' conceptual understanding of the curriculum by training teachers and addressing families/caregivers' and other critical perspectives' concerns.

“We started working on training teachers the math itself to ensure they have greater understanding, knowing that teachers truly can't teach to children if they don't have a clear conceptual understanding. So what this grant has allowed us to do is bring teachers in to really work through the math skills with them and the math facts.”

“Many of our teachers are still of that generation where we did things very methodically through memorization, and now we're really digging down deep into the information and the skills that students need to have a conceptual understanding more than just a rote memorization. So I believe that the Gates Foundation has allowed us to better prepare our teachers who are in front of our students for their instruction.”

“To go from students to parents, that's one of the things that I think we're also doing a better job, is communicating to parents, specifically the changes that they should be seeing when they see students' math work, and also helping them understand concepts like productive struggle and not giving kids answers.”

“We've also then been able to work with parents and other stakeholder groups to support what their concerns and their needs are because we know that we're still at a generational gap between those instructing the curriculum right now and those who have learned the new way of doing math is what I'm going to call it.”

Executive sponsors focused on engaging leadership in the implementation work, as leadership involvement and buy-in maximizes successful implementation.

“District-level support, support from leadership in the implementation, because that's such an important thing. I come to identify that factor in my current role, in having been with this grant for the whole duration... I really see the importance of having the leadership buy-in and support.”

“I'll start with one that just rises to the top, and that's a focus on developing the instructional leadership lens of our administrators. So, I think that factor came to as a need because of feedback from instructional coaches who were really carrying the load of the teacher support and implementation. And really explaining how the partnership with the principal in understanding the critical nature of the changes that they wanted to work with teachers on, how much of a difference it made. And I think that this factor has become even more important and valued as we see the principals engaging in the observation walkthroughs, and engaging and encouraging the data conversations that are happening in school site, how much more focused the teachers and the coaches are.”

Implementation Barriers

Principal buy-in and involvement impact the success of implementing the curriculum. **Executive sponsors identified principals' and other school leaders' inability to promote the curriculum as a barrier that impeded implementation.**

“We know that the number one indicator of school success is going to be, yeah, teachers are critical, but leadership will make it and break it. And so depending on the buy-in that principals had and their involvement, that made a difference in the success of programs.”

“if the principal supervisors are not aligned with the priority, then they're going to tell principals to focus on something else. And so I think that has been the barriers, the capacity of principals, teachers, principals, supervisors, and how they support the work that is happening at the school level.”

District factors, such as increased workload, impact principals' and leaders' ability to dedicate time to support the curriculum implementation.

“In terms of the barriers is just seeing the load that is on our principals because ultimately it's going to start with the leadership at the school and it's going to trickle down from the principals if they have coordinators or assistant principals (APs) to the coaches, to ultimately the teachers to the students. And so the teachers are certainly a huge important factor, but the coaches and the APs, but the principal, I'm going to say is the one who's going to help navigate through the barriers that they might encounter, carve out time and make sure that there is success.”

“In terms of the barriers, if that person who is running that school is encountering multiple different initiatives, how do they find focus? And if they don't find focus with it, then it just continues, the implementation of the [curriculum] just continues. The teacher has their book, they know every Tuesday they're going to go and they're going to plan, but if there's no guidance and direction or there's no support or their feel of support, then that just causes it not to be a priority.”

Leadership transitions also pose a barrier to implementation. Executive sponsors worked to find new allies to support implementation work with each leadership change.

“Every single year we saw somebody different and that even though the vision stayed the same for us as a math department, there was a lot of change up on the top in terms of how messages were conveyed, what access we had to schools and principals. People don't realize, but that's like you have turmoil, something is happening every six months and people are coming, people are going, people that sign off and supported the work are not with you anymore. So you have to find different allies to support the work consistently.”

“Leadership changes are challenge to any implementation, because I oversee all the curriculum areas. I think that our math initiative, with the early implementation work, whenever there's a change in leadership, we have to bring others on board and up to speed with the things that have already been done, and even more importantly, with the impact that work has had on student performance. Sometimes, that impact is not yet bearing itself out in traditional ways of measuring. I think when there is leadership changes, you have that barrier of bringing everybody up to speed, getting buy-in.”

Strains on financial resources due to school budget changes posed additional challenges, such as districts not being able to fund coaches or purchase curriculum materials.

“The constant hustle to get the funding is what I want to highlight is the barrier. I think we'll be able to get there, but always being somewhat stressed about it and not being able to say, “Yes. We're fully committed to this on a financial level,” I think is problematic.”

“The other barrier with that is the amount of coaching support that may not be available. And it's not available because there just isn't a coach, for example, in mathematics... having access to a coach, having funds to provide that coach...”

“The basic adoption materials we have covered, but sometimes there are additional things that we want or need that are consumable in nature, so that can be a challenge. Some of the platforms that we have used have been pricey, so when the budgets get challenged, those things start to become a real stretch.”

Executive sponsors also noted some teachers’ hesitancy to change their practices to align with the curriculum as an implementation challenge.

“The teachers who are uncomfortable with the math are still reverting to, I’m just going by the book. But they might not be using the teacher’s guide. They might just literally be using the student guide, and then just writing the example, but without their own conceptualization of what that is. So now, you’re just doing it procedurally again. So, they rely heavily on the materials, which is why the high quality materials are important, but no material will ever teach your children. You still have to engage in strategies that allow the kids to understand that math beyond the page, because otherwise they could just read, just copy the process.”

“Teacher mindset. So we have to remember the way we learned math. And the way we learned math or even the way our teachers have been preparing colleges of education, if they’ve gone that route also doesn’t have the inquiry-based focus beyond an equation to solve problems. And so how do we really build the capacity of teachers to understand how they themselves go through solving a problem so then they can build that capacity with the students and get the students to really think through it and have productive struggle and talk to each other in order for that to happen. So that has been a barrier because everybody’s coming in at different levels, that’s not a stringent education.”

“I’m going to leave you with as a barrier is like it’s ingrained in people’s minds that I do, we do, you do. You go everywhere. They’re going to say, I do, you do, we do. And when you start saying it’s about how do you expect students to build problem solving skills, how do you expect students to grow as critical thinkers?”

Implementation Supports

Providers supported executive sponsors by “filling the gap” and taking on implementation tasks such as building professional learning, providing materials, and offering coaching support.

“What was supportive is they helped build the PD. They did a lot of it, but we talked about it beforehand. So it wasn’t just them creating it. We talked about what we wanted to see. They helped build it. So it took some of the work that I would be focused on doing.”

“The provider also going to the school sites. Sometimes we went, sometimes we didn’t go. But connecting with the teachers, building the capacity of the leader. I think that’s what ultimately... So I’d say the provider providing the materials, the tools, and the specific coaching support.”

Executive sponsors supported teachers by providing one-on-one coaching and professional learning

training.

“One of the most helpful pieces was when we wrote the grant. We did write in a teacher on special assignment (TOSA), which is [name]. So she is able to go in and do some one-on-one support and coaching with the teachers that are part of this grant, that allows us to build that trust between teacher-to-teacher. It allows some additional training on those days when we're not doing the direct training. So I think that has been powerful.”

“The professional development was extremely helpful. The manipulatives and tools that we've purchased for teachers has been helpful. My own learning for myself through the trainings has been helpful.”

District factors, such as teacher retention and rural vs. urban school districts impact the effectiveness of executive sponsor-provided support to teachers.

“When we talk about teacher recruitment, and then keeping teachers, training good teachers, and not losing good teachers, we do struggle with that. I think that because we lose them to the bigger cities around us... it's hard, and then it's similar to other districts I've been in other rural too. We get them as babies, we train them. We try to even have a really good mentor-mentee program now in the past two-and-a-half years, trying to give them support that they need, and then we lose them when they get a job closer to home.”

“When I consider geographic location, I consider the way in a way, some of our schools are segregated and are in large zones of poverty with large numbers of minority students or black and brown students. We couldn't do a cookie cutter approach for support. So we had to really think about based on the needs of this school that is in this location, so I'm going to mix it with multiple factors because it's not just the geographic location. How do we make sure that we provide more differentiated support to these sites where they might have the largest turnover rate, where they might have the most impacted population, where they might have the largest achievement gaps.”

Impact of Math Curriculum Implementation

Teacher Impact

Executive sponsors encouraged teachers to shift their mindsets from teacher-centric teaching practices to implement new student-centered curriculums.

“For the teachers too, I think they're finally, because it's so hard for them, because they think that it's still that teacher-centric teaching of, “It's star time. It's testing time, and I need to be talking 80% of the time, because if I don't, you're not going to know all the things that are in my head,” and so we're really trying to help them understand it's the opposite of that. It's the opposite of that. We need to hear them way more than we need to hear you.”

Teachers preferred working in teaching groups to build lessons rather than working with coaches one-on-one.

"We saw that sometimes, when you do coaching with an individual teacher, there are some affective variables that come into play there. For example, teachers view the coaching as, 'I have the coach because I am in trouble, or I'm not performing.' Even though the coaches and the principal, and others will say, 'No, that's not the case,' someone's perception is their reality. By using the team approach, and designing lessons together, the whole group owns that work, and is all heads in it together."

"We have shifted to more of a lesson study model in some instances, or working with teams of teachers by a grade level, or with entire departments. It's still in that coaching role, because the central office resource teachers are still participating as a partner. They're collaborating, and they're designing, building and building together, looking at student work together."

Student Impact

Many executive sponsors reported that student math self-efficacy and confidence have increased because of the curriculum and teachers engaging students in small groups and establishing a positive emotional connection with students.

"The social emotional pieces and connections that we have really encouraged all teachers to make with students, helps build the confidence in all subject areas, that they have a different connection with their teachers. As before COVID, we weren't encouraging that as much, and we didn't give teachers as many tools to be able to do it as they have now. And when students feel confident, they'll do better."

"Indications are, and the feedback that we're getting from the schools, is the students are coming in not necessarily at a higher level as much as, and this is the second thing that I would highlight, possibly more confident with their mathematical abilities. And so really focusing on confidence and just feelings of efficacy within the students and the data also shows the same thing."

Executive sponsors also reported that increases in student engagement resulted in changes in student appreciation of math.

"From what you see engagement, you see more joy, you see changing mindsets, right? Having that growth mindset, understanding that I can be successful rather than having that stereotype or that false sense of, oh, math is difficult, that it can be something that can be attained."

"By engagement I mean the implementation has shown more academic discourse. In other words, implementing the program shows that we can teach math in a way where we don't have the traditional rows or tables facing one direction... the curriculum implementation shows that students can work with one another, which ultimately lets them feel more successful, which lets them allow them to work with

their colleagues and not have to rely always on the teacher, that there is some independence or yeah, there's independence, but that they can believe that yes, it can be attainable."

"The part that I'm most confident speaking about is the way that students engage in math classrooms. We have what we call a capacity builder model, and we bring teachers in, and they meet regularly for professional development. When I go and visit these teachers' classrooms, they're teacher leaders in their own right in this work, seeing how the students are engaging in their classrooms, and talking to one another, and actively problem solving, and asking questions and questioning one another, and encouraging one another to share their thinking out loud, it is powerful to watch, and has definitely changed how math is taught in some of our classrooms, and the kids themselves."

Data

Data Use Improvements

Executive sponsors used teacher and district team survey data to make decisions on how to improve the support provided.

"I think that using the data points that we have now, I'm going to say that the ones that I've grown and I feel the team has grown the most on has been the qualitative data that we get back. That's the surveys from teachers, the surveys from our own team... And so, I feel like that has definitely been the most beneficial data that I've received, and that's something that we need to continue to replicate when we're having our professional learning and when we're getting feedback from our teachers on all that. "

"When it comes to the teacher data, like, as far as you know, how is their usage and then, and then how is their, their outcome right when it comes to what they have. We do look at it from that lens when it comes to as a whole. And then we look at this individual as a campus as a whole and then we look at this individual teacher who's struggling, who's not. And this is where I tell my folks to go out there and support them.

Executive sponsors used PDSA or "data chat" cycles to streamline communications around data usage and increase understanding among teachers and administrators.

"I mean, it got harder as we went on. And I think my ability to make use of the data is understanding that those elements, whether they're qualitative or quantitative, are important because then we can come back to the staff and say, here's what we're seeing... the drivers to that were, initially, it was having the conversations with the provider, then it would be taking those data sets and having the conversations with the principals, and then it would be taking the conversations with the principals to come up with an implementation plan based upon the data. And then it would be going back into the classroom after you've had the conversations or the modeling to

see if it's being done. And if it's not being done, then let's start back and see what the barrier is. It's going through this continuous cycle. We would call now a PDSA cycle."

"One of the big things was actually making use of the data period. I do think we had a lot of data that we weren't even looking at. And so, one of the structures that I think has been probably moving us along the most, is that now we've aligned our data chat cycles for our school leaders, our principals, along with the conversations that we're having around their [curriculum] goals."

Remaining Data Needs

Executive sponsors want to expand data collection systems and supports to further incorporate student feedback and capture student motivation.

"If we could get some qualitative student feedback data on their learning, what was different from sixth grade versus fifth grade, and truly be able to analyze that to see what did they feel were strengths as being part of this cohort with this teacher? I know we do some student data surveys of them, but to really delve deeper into that or to get their feedback following a lesson or a unit that we may have worked closely on in the grant."

"We have district math measures, and we probably have a math grade, but we don't have any way of collecting some of the... we use street data in our district. We don't have any systematic way of collecting information about students' interests, motivation, supports they might have outside of school to help them accelerate, if that's what they want to do. We don't have that information, and we're trying to build that right now."

"One of the things that we are doing, to give you some context, we are right now reconfiguring some departments so that we can have a more robust data system. An asset-based data system is what we're trying to build, because we want more than just a test score to give us a picture of a student. We don't have a robust enough data system to be able to get... a 360 view of a student would be the ideal state."

Scaling

Executive sponsors who clearly communicated and formed relationships with district members to gain system-wide buy-in to the curriculum reported an increase in the number of classrooms implementing the curriculum.

"We've gone from 10 to 74 or something like that. Maybe it's 11 to 74. And how did we do that? That's actually my first answer, was really around our relationships and getting out there and just showing people what we're doing and having somebody that's trusted tell you, "This is really cool and likely better than what you're using right now and we're going to support you."

"There was this idea of a scaling factor or even sustainability in terms of it being a,

not something that's just like, "We've arrived. I really appreciated your session," but it's something that's constantly changing and engaging. But part of that comes from clear communication and that it is a strategy, truly a strategy in which we believe in as a district to impact all students across the system."

Some school conditions, such as teacher vacancy and virtual learning classrooms, led to a decrease in the number of classrooms implementing the curriculum.

"It's up and down since the start, because as I mentioned before, it was in 2020, and there were some challenges there. I would say recently, it has decreased, and that is due to teacher vacancy. If there was a classroom that did not have a teacher, or had a virtual teacher, it was very difficult to have them engage in this work."

"When we got into the schools, as we started to roll this out, we wouldn't find out and say, "Oh, their sixth grade teacher is virtual." It's like, "We didn't know that when we started?" Really, just making sure that the school is in a good place, and they anticipate being in a good place moving forward, so that we're not putting another thing on them when they have challenges already."

Executive Sponsor Lessons Learned

Communication

Executive sponsors noted the importance of communicating with board members, teacher unions, and caregivers on the progress implementation teams are making.

"Communicating for me at the board level, making sure that the board understands the progress and growth that we're making. And in this project, we also spend a lot of time on the importance of parent communication."

"We had to be able to communicate and work with many different stakeholder groups, so including our different unions to make sure we weren't violating anything there. So I think keeping all of those teamwork processes together while it comes under the communication was essential."

"Communication, making sure that my board of education was aware of what we were doing and the why to what we were doing, as well as the superintendent and the chief academic officer to make sure that nobody came in and shifted gears on us."

Some executive sponsors found it helpful to appoint a team member to manage and streamline all communications.

"That was a big lesson learned, that when communication maybe starts to get a little overwhelming, then maybe you need to specifically identify somebody to manage it."

"We know that there are so many communications that go out to so many different stakeholders in the work, and it's hard to stay on top of, and you also want to be clear and concise in your communication. The lesson learned there is, particularly if it's a

larger scale, you really have to have somebody that is managing all of that.”

Fit and Feasibility

Including teachers in conversations around the curriculum fit and feasibility helped gain teacher buy-in and sustain the work.

“Having teachers and administrators as part of that conversation early on with fit and feasibility, I mean, it's just so critical, and getting them to almost even practice with the curriculum.”

“Fit and feasibility are the most important things when you're talking about teacher buy-in and teachers really being able to understand, “Yeah, we can do this, and I do understand how this is going to fit into a 45-minute period, and I do know how this additional computer program is going to work.”

“The work that we have done to engage our classroom teachers in the process, and our students in the process, has allowed us to find cheerleaders, if you will, who are willing to go that extra mile, and really sustain the work. I don't know if that really fits into fit and feasibility, but in my mind it does.”

“And the lessons that we learned from [provider] on how to do a fit and feasibility structures with our teachers, and for them to understand it's not just about, “Oh, this one says it has great... Yes, it's all green on EdReports.” Yes, but is it feasible for our circumstances and what we have when we have to implement it? I think that's the biggest thing.”

Team Functioning

Executive sponsors had positive relationships with providers and described providers as thorough, responsive, and trustworthy.

“And then team functioning. I think that one, we have been so blessed that I don't think we've ever had non-communication or anything drop because our partner provider has been so thorough.”

“They're super responsive to our questions and needs and same with [second provider]. Like when we have questions about curriculum or support.”

“I'll start with [provider]. Top lessons learned there is that you do have to have a trusted and valued partner to have effective implementation, somebody helping answer your questions, guiding you through the work, supporting and really mapping out that plan. They've been phenomenal.”

District teams that functioned well set clear expectations around roles for team members, and problem-solved and celebrated success together.

“The team doesn't function if one part of the team doesn't do its role. And so, I think that's one of the lessons learned, is just being transparent about what the

expectations are, checking in frequently to see if it's doable and collectively readjusting with an explicit why when it's not feasible for somebody."

"I think folks being really clear about what they're doing and why they're doing it and whose responsibility is to do it. Right? Their respective roles within a team are important."

"We have a really strong team, and the time for the team to be together is really critical, and important, and for them to learn together, and to problem solve together, so that they have buy-in to the work they're doing. They celebrate success together."

Coaching Listening Session Results

Key Insights

- ***Coaches believed that successful implementation requires cross-leadership, district-wide, consistent, and supportive messaging; commitment of resources and time; teacher buy-in and support; and accountability.*** Where one of these was missing, implementation was less effective or less likely to be sustained.
- ***Coaches reported that administrators best-supported implementation by aligning initiatives and priorities, supporting teacher professional learning and collaboration, and promoting accountability measures to track progress and ensure consistency across schools.***
- ***District leaders' and coaches' recognition that implementation is a continuous "learning journey" that requires time and focus on positive changes and progress also supports implementation.*** Such efforts increase teacher buy-in, their willingness to engage in new practices, and their desire to make changes to their practice.
- ***Coaches identified teachers' resistance to change as one of the biggest barriers that impede implementation, along with teacher turnover, student mobility, or when teacher professional learning is not mandatory.*** Time too is a factor, as competing priorities and new initiatives shift emphasis from efforts both among administrators and teachers.
- ***Multiple coaches reported that student engagement in classrooms had increased because of the curriculum and teachers' willingness to try new pedagogies, including supporting conversational learning.*** Coaches were less confident that student achievement had increased without test scores to support their conjecture.
- ***Many coaches reported utilizing different data this year, especially student survey data and teacher observation data, to better understand what is happening in classrooms.*** Coaches reiterated that lack of data is not an issue as much as how to make sense of all the data that has been gathered.
- ***Whereas coaches reported having access to multiple data in various forms, many reported that there was little comparative data that allowed them to assess how effective the initiative had been, particularly with respect to student achievement.***
- ***When asked about the sustainability of efforts beyond the grant cycle, most coaches believed that use of the curriculum would continue, but that whether things such as changed teacher pedagogical practices would continue was likely to vary.*** Many believed that more time with continued support to help teachers learn the curriculum and change practices were needed to ensure that grant-supported changes would be sustained.
- ***Among lessons learned, coaches reported the need for bi-directional (between administrators***

and teachers), clear, and consistent messaging and communication. Recognizing how important communication is, coaches realized that teachers were often left in the dark about messaging despite being the key to the success of the initiative. Another lesson learned is that communication needs to be crafted together across stakeholder groups and provided in multiple forms so that it reaches all audiences.

- ***Coaches reported that fit and feasibility were critically related to the support provided to teachers to learn a new curriculum, both conceptually and from a pedagogical perspective.*** Coaches reported trying to better support teachers who work with Exceptional Children (EC) or English Language Learner (ELL) students to modify aspects of the curriculum to support these students' engagement. As a result of the curriculum and teachers' more nuanced facilitation, some coaches reported seeing greater engagement among students in math classes, including ELL and EC students.
- ***Coaches reported that a critical lesson learned related to team functioning is that all team members need to share the same vision and goals and how to achieve them, in other words, be "mission-aligned".*** Multiple coaches also noted that for teams to function well, the providers have to understand the schools, districts, and states, and work to meet their needs versus asking schools, etc. to change.

Implementation

Implementation Facilitators

Coaches identified multiple implementation facilitators that supported districts' understanding and use of the curriculum.

Coaches emphasized that regular, scheduled meetings with clear agendas and explicit goals, such as leadership meetings, coaching sessions, and weekly meetings with school coaches best supported their abilities to implement the curriculum. Consistent communication and alignment of messages among teachers, school leaders, and district leaders increased administrators' and teachers' shared understanding of the curricular goals and impacts.

"So, I think one thing that is critical is investment so that the schools, and I mean at all levels, so that the teachers, the school leaders, and the district leaders are in alignment in vision and implementation and supportive of that particular curriculum. Because without that, there'll be conflicting messages and then that then creates competing priorities. And so that was one of the things that I think was really critical."

"That it's essential that all parties are involved and that those of us who are also between the provider and the district, we're constantly meeting, and I think that has been extremely essential. ... But all parties being involved and everyone having an idea of what's happening has been really helpful."

The significance of coaching and modeling, particularly by coaches from core learning organizations, to guide teachers through the initial steps and showcase desired teaching as part of integrity or learning

walks was critical to the successful implementation of the curriculum. Coaches provided practical feedback and worked with teachers to unpack lessons, units, and routines to help them adapt and improve their own pedagogical practices. Inherent in these actions was a commitment to providing confidentiality and creating a safe learning environment, allowing teachers to be vulnerable, share mistakes, and engage in open discussions without fear of consequences.

"I think one is professional learning because as we have now started observing teachers, it is clear that people who have attended professional learning are being more successful, and their students are more successful in implementing the curriculum and the routines that we have talked about in professional learning. And then it's apparent for teachers that don't attend professional learning that that is not happening."

"And then for me, in addition to the training that the teachers went to, which unpacked all of the units, additional coaching from the partnership. So, we have someone coming in and working with the instructional leadership team, and we do instructional walks as well."

District leaders were also critical facilitators by supporting district-wide professional learning where teachers can learn together, collaborate, and share experiences. Where all teachers were engaged, and time and coverage were provided for them to attend professional learning activities and plan together, districts experienced earlier and greater teacher buy-in.

"One thing that is critical is investment so that the schools, and I mean at all levels, are in alignment in vision and implementation...Because without that, there'll be conflicting messages and then that then creates competing priorities."

"I think also the support that we get from different administrators in our district, they've been instrumental in paying for the licenses for our students to use, and the teachers really get a lot of the professional development..."

The importance of teacher buy-in and willingness to participate in the implementation process are also drivers that supported adoption of the curriculum and attention to new pedagogical practices. These drivers are tightly linked to district support for learning and collaboration and coaches' learning of safe learning environments and commitment to confidentiality.

"I think also another factor is the school, the team, and especially the teacher's willingness to unlearn and relearn the curriculum."

"The idea of the school condition survey, making sure that we had proper conditions in place to implement the program, and a lot of work that they've done to, I don't want to say simplify, but make it easy for principals to digest the information, so that they can get on board, and also utilizing us to help create buy-in, because I think as we've evolved over the years, I think we've had more buy-in at this point than we've ever had based on that support."

"I would say teacher buy-in, quality professional development experiences, and low stakes points of entry."

Coaches also reported that implementation was supported by the administration through their alignment of initiatives and priorities for effective implementation and their promotion of

accountability measures to track progress and ensure consistency across schools.

"The factors that I believe maximize the successful implementation of the math curriculum is having a district-wide professional learning support."

"Executive leadership, alignment of initiatives and priorities is a key factor in effective implementation and ensuring not only a proper resource allocation, but also ensuring the marketing relevance that the work requires to maintain integrity and dedication at different stakeholder groups."

"The accountability piece. This program, this initiative has a lot of accountability. Like [name] said, we meet every week, she makes sure that we're on track with our goals. And also, I had a lot of administrative support for this work at my school. So, my principal allowed me to prioritize this initiative with our math team over my other coaching responsibilities. So, I think that was key in getting the success that we did at [district]."

Coaches had different opinions as to whether leadership changes were facilitators of or barriers to implementation, with much of this dependent upon the specific person.

"We have had a change in leadership since we implemented this curriculum. However, the person that took over was already within the department, so that was a little bit more seamless."

"And also core leadership has changed. It was like, "Oh, you're going to have this guy," and then he changed in the middle of the year. So, every single year it's been different in terms of even outside people pushing in, so it's been a constant change from my perspective."

Coaches also noted that change among other leadership, including coaches, could also positively or negatively affect implantation, partly depending upon whether it resulted in teachers changing schools or positions.

"But then the next year, I took on the role of [coach] at that school and then we got a new principal. And so, I will say that, for us, I think they were mindful of that change and so they started us back in year one that year, because I was in a new role even though I was familiar with [curriculum] and because the principal was new. And so that helped us with implementation because they started our cycle back over with the change in leadership."

"I came in the second year and no one who's in this meeting is the same people that I've collaborated with when it started, so every single year it's been different people. So, it's not just big leadership like [name], but it's also who's on the committee, who the coaches are participating."

They also recognized that for teachers, any change, whether positive or negative, often results in changes as to what is championed or pushed, and that affects teacher buy-in.

"But I do think historically with change of leadership, teachers are always thinking, "Oh, well, they're going to get rid of this and it'll just be the next thing.""

"So, from a teacher standpoint, when you talk about how changes in leadership affect, I think teachers are always just waiting for the next thing to come through, and a lot of times that happens with a change in leadership. That did not happen for us this time, but I think that is one

way that leadership changes effect. They just wait on the next program. If someone new is in, they're going to bring something new with them, which also affects the teacher buy-in. They don't want to go all in on something that they think is only going to be around for four years."

Implementation Barriers

Barriers that the coaches identified highlight the complex dynamics involved in curriculum implementation, emphasizing the importance of teacher mindset, ongoing support, professional learning, and addressing organizational challenges.

Coaches identified teachers' resistance to change as one of the major barriers that impeded implementation.

"But secondary teachers, because they have math certification, think they know better and they are making decisions even if the curriculum says, or even if the district says this is our curriculum, they are saying it's not working for our kids. And it's that mindset resistance of I feel uncomfortable with this, and my kids don't do it, and they abandon ship."

"I think that sometimes all of these things that [the district] has in place is slightly intimidating to the teachers, and I believe that it's all about the approach of the team. But no matter how positively you approach it, you're going to have some teachers that feel very intimidated by the process. Also, it's a lot of extra work and a lot of times it's on their own. They're not being compensated, and I think that that's something that is a barrier."

"Mindset of teachers because I think... it's getting them to see the value in it of why it's better and it's getting them to see."

The curriculum itself also posed challenges in some cases as it took time to master and sometimes did not appear to address students' needs.

"Learning a new curriculum is really hard. So, if we have a lot of new teachers every year trying to get them, it takes a couple years to really understand [curriculum] and what the idea behind it is. So that's a struggle, especially it seems for our school with the upper grades, which is the hardest to teach math."

"But also, if students are coming in below grade level, which there's a lot that come in below grade level, it's really hard to provide that intervention to them. And I've seen teachers struggling with that, to try to catch them up. Which is always a struggle every year with any curriculum, but I think that's just something that has been the hardest. The biggest barrier for teachers is to try to catch them up so they can keep moving, even though it seems to spiral a little, it doesn't really get to those foundational skills that they need."

Coaches noted that whereas they tried their best, at times the support they provided backfired or was not as effective as they had hoped.

"The time I spent with a couple of our most struggling teachers, I spent several weeks in their classroom with them, and it seemed to make real progress with the understanding of how IM works and implementing different things. And then I left, kind of slowly pulled away and then they just went right back to their way they were doing it before I spent three weeks with them."

"I guess the process, it's a double ended sword. Because we had talked a lot about coaches and admin doing the walks, having to be offsite a lot was hard. And so, we tried to condense the walks to doing sometimes three schools a day. And that sometimes felt like a barrier, I thought, because it was like go, go, go. And then by the end when it was time to do the next steps in reflection, I often felt like, "It's now 3:00, we've been at three schools, we've been in 10 classrooms." And I just for myself knew I wasn't always at my best at 3:00 when we're trying to set our next steps."

Teacher turnover in some districts posed challenges as coaches struggled to move veteran teachers forward while trying to catch new teachers up. Teachers faced similar issues due to student mobility and some students having much different math backgrounds and knowledge.

"I think especially with the upper grades, there's a lot of turnover with teachers."

"At our school, we run into the problem of new kids coming all the time and it is such a different program for them."

"There has been some change at teachers, and so it's almost like having to go back and renorm and set the stage. But again, it is not always easy because the stage isn't really set, there's not a system set up of them meeting with us that it's knocking at their door and seeing if they let us in because there is a lot of moving parts going on this year."

The turnover among school and district leaders also posed problems, according to coaches, as it could result in changes in support and or teacher mobility.

"So, there's been a change of leadership just as simple as the principals, the admin at the site... but I think there's a lot of moving parts this year that sometimes this isn't their priority of learning about math curriculum."

"I think that the history of turnover and instability in leadership in our district also contributes to teacher mindset. Teachers are here for the long term, but the leadership comes and goes. So, it makes it difficult for teachers to buy in sometimes because they know that leadership is going to come and go, and programs are going to come and go."

Given the time needed to implement the curriculum, some coaches noticed a loss of focus among leadership or less communication given to sustaining efforts as time passed.

"District leadership, due to state, federal mandates, funding are constantly bombarded with different initiatives and different funding priorities. And so often something like a curriculum implementation process, which is oftentimes a multi-year process, especially when you get to the more classroom implementation, reflective process of effectiveness part of it, sometimes that work doesn't get done or doesn't happen in a deep, meaningful manner because in that time span of multiple years, district leadership has been bombarded with multiple other things and have maybe reallocated resources or just simply time and energy."

"By the time we're two, three, four years down the road and we're getting into that implementation and coaching part of it, sometimes executive leadership has maybe lost some of that focus and intentionality."

In some districts, teachers' engagement in professional learning around the new curriculum was voluntary, resulting in not all teachers or even administrators being committed.

"We do not have teachers' full commitment in that it's voluntary, as well as principals, because it's on Saturdays. So, it's not even that they're not excited about it, and that they may not want to do it, it's just that they may not be able to."

"I think that it being that it's not embedded in the workday has created a barrier, so not everyone's participating."

Coaches also noted that adopting a new curriculum takes time and effort, and that fatigue can easily set in after many years of engagement, especially if supports are removed.

"One of the challenges is that I think it just takes a really long time for you to eventually see the changes. Especially, we have a lot of conversations about it's really shifting the way that teachers have been teaching mathematics and the way that they've learned it. So, some of the teachers have mentioned, that I work with, that it's like having to go through Math ... I think it just requires a lot of time and too much for teachers to redevelop the way that they've been teaching mathematics."

"I feel, and I don't know if this will answer the question, however it's like we just got the ball rolling and then it's over."

Coaches in some districts noted that their districts encompassed very different student groups which were often concentrated in separate schools. In such cases, coaches worried that teachers were reticent to adopt certain teaching styles such as that of guide versus lecturer, because of misperceptions they have about the student population, or had to adjust teaching styles to better meet students' needs.

"I think that ... individual schools make a difference because the school that I'm at, it's a different population than the school where someone else is at and it makes a difference of how the instruction occurs."

"And over the last two years, we've seen a significant increase of families who are English learners, are Hispanic, are possibly socioeconomically disadvantaged. So, our teachers are having to shift their instructional practices to meet the needs of those kids."

In a few cases, coaches noted that families/caregivers in affluent districts or schools had a greater say in what curriculum was adopted.

"...maybe not geographic as a whole district, but within our district, I do think location impacts implementation because we have certain areas where the influence of the community or parents are greater. And so, if they have a strong belief in another curriculum, they actually chose a different curriculum."

"So, they're not implementing the curriculum that the district has adopted. So that's more probably affluent areas geographically. You will see an impact on implementation because it may be completely different, and they get to choose what they wanted to work with."

Some coaches noted that school or district locations, populations served, and cost of living can affect

teacher supply and retention.

"It also makes a difference in consistency of teachers in the math department. We've had two long-term subs. Our students have not had two permanent math teachers in four years, no certificated math teacher in four years. So, you can imagine the need that we just discussed to go back and reach those foundational skills, but when the barriers are there, then it's difficult."

"But I think the big picture is it's almost impossible for teachers to afford living here based on benefits and salary, so that has to do with retention. High-quality instructors, people staying for longer, and also having a really green staff."

Supports and Practices

Supports Received/Provided

Coaches noted that providers provided some of the biggest support to them, whether by supporting their professional learning, collaborating with other coaches, or serving as thought partners to help them consider the best ways to support teachers' understanding of the curriculum. In some cases, providers even provided direct professional learning to teachers that coaches could observe.

"I think that the networking conference was awesome to be able to hear what's working, hear what's not, hear how we're similar, hear how we're different. So, that was a great takeaway last year."

"I think the most helpful is our providers meet with us coaches every Friday so we can talk about any issues that we are having around coaching in the classroom and to help us work through some things. Also they've helped with, it's great to have these thought partners with new things or new ideas that we are going to try out."

Another critical support multiple coaches commented on was meeting with other coaches in their district to plan together, exchange ideas, and troubleshoot.

"I was thinking, to me, I loved meeting with my coaches weekly. I felt that that was so helpful, and I love that it wasn't like I was coming in like the knowledge of all, and I really like what [name] said, it's like a thought partner."

"So there is, let me see one, two, about four partnership coaches that facilitate. And in those cadres we explore the IM toolkit and all the resources that are there. We do mock lessons or we watch videos, so that's very helpful on implementation. And they also have a separate block of time for instructional coaches, so that's very helpful."

"You're looking at one of my main forms of support right now. I mean, I'm just thinking about how often I reach out to [name] to say, "How are you structuring this," or reach out to [name] to connect. So I think that our internal team is what I would consider my first level of support when I have a question or I'm thinking about an idea."

In terms of supports that best help teachers, coaches again reported that teacher buy-in is critical to supporting teachers' willingness to change practices.

"Everybody's at different stages at these sessions because some people haven't attended many Saturdays 'cause they're just new, they're on their year one at the buildings, and then there's some that have been there for all of the sessions. We have all of the different roles come to play too. So you have some administrators who are talking about, "Okay, well this is what I want in the next grade level. This is the teacher that I want you to work with." So I think those have been very helpful."

"I think right now this year with them being more open and willing and wanting to dig in a little further and taking what your other districts have done with this coaching cycle that I've had this opportunity a few times this year from a single teacher or two teachers or a whole math department doing some of this coaching cycle and learning about a math language routine has been powerful for them and for me, very powerful. I am loving it and am begging to continue it."

Coaches also believed that they should support teachers by directly working with them, whether modeling lessons, unpacking units, reviewing data, and/or co-planning.

"And so the time I spent actually looking at cool down data with the teachers, and planning out what is the next step, what is the action step in coming out and what that looks like specifically to respond, I've heard has been very helpful."

"I would say the most helpful in my opinion, has been the time when I sit down with teachers and actually unpack lessons and unpack units to really push teachers' content knowledge and push them to understand how to execute aspects of the lesson."

"Also, modeling for our teachers. In the moment, we're in the classroom and she picks up and she says, "Here, this is how we're going to do this particular instructional routine." That was really helpful for the teachers as well."

Providing time for teachers to collaborate as teams and/or observe other teachers were also ways that coaches believed best-supported teachers' understanding of the curriculum.

"I think any opportunity where we can get teachers together to help facilitate the learning from each other, I think that is a support. So teachers being able to share their best practices, their questions, their dilemmas in those spaces. And then also there's been a real call for wanting to see the curriculum."

"The school also created common conferences for the teachers that taught the similar grade levels. So Algebra 1 teachers, content teachers, and co-teachers have the same conference. And I meet with them twice a month and then currently what we're working on, which we started last year is peer observations, again running our own internal instructional walks, but using peer observations and also video recording lessons."

Impact

Teacher Impact

Coaches identified multiple and varied practices that supported teachers' understanding and implementation of the curriculum, particularly modeling lessons and/or co-teaching.

"And so, by modeling first and then co-teaching the teachers that, I would say, that had the most significant challenges with, have had significant gains if I were to compare the time when I was just providing feedback and not modeling or co-teaching, it's like night and day with the same teacher."

"I would say the most helpful was probably modeling and co-teaching, and the least helpful was taking notes and providing feedback without modeling."

Multiple coaches also identified learning walks where other teachers observe their peers as an effective means of helping teachers identify and learn new and successful teaching practices.

"One support that I provided was the opportunity for them to do a learning walk within the building. We are doing the learning walks at other schools, but they don't get to do that. So, we gave them the indicators, or rubric, and we allowed them to observe each other."

"So, I think a really big part of teaching in general is being able to see other people teach the same thing you're teaching. So, to go to other schools and see that, for the teachers, I feel like that's very powerful. So, the lesson studies did help with that. And also, we do peer rounds at our school."

Coaches were also able to identify practices that teachers used successfully with students.

"So, the three-read strategy, I've noticed teachers using it frequently even after our planned observation. So, a strategy they keep using with their students, they have it in their classroom, so I think that's really beneficial for them and for the students. Especially before the CAPS testing in the spring, like they've mentioned, this is a good strategy to help students to really think about what the questions are asking."

"I think something else is the teachers allowing the students to use something called the Try-It Routine, where the students try to solve problems before they get explicit instruction in so that way they're able to leverage their past knowledge. Also, if they're struggling during this, which many of them do, they have an opportunity to work with partners or small groups to lower down that filter for them. So, I think we got a higher level of engagement for more kids because they felt more comfortable discussing the problems within small groups of peers or small groups with a teacher facilitating than a teacher just calling on them one-on-one to give an answer."

Student Impact

Multiple coaches reported that student engagement in classrooms had increased because of the curriculum and teachers' willingness to try new pedagogies that support conversational learning.

"Well, one thing I've noticed is more students are willing to come up to the front of the class and share a strategy to solve a problem that they tried. In some of our classrooms, students are even willing to come up and talk about an error that they made. So, they're willing to share, they're willing to feel vulnerable, and like, yeah, I made a mistake. So, I think it's just creating a better classroom culture, a more open and inclusive classroom culture, so we get more students participating."

"We're seeing more conversations happening in math classes, more student discourse, student to

student discourse happening, and teacher questioning has definitely improved in the classrooms. Some teachers, it stretches them because since this is a student-centered curriculum as opposed to what we did before, they're a little wary about releasing time for students to talk because they feel like they have to control everything that is happening in the classroom."

Coaches were less confident that student achievement had increased without test scores to support their conjecture but did note areas that they believed pointed to increased achievement.

"And I would say there with the schools that I have seen, I do see an increase a little bit in the application piece. Because usually our kids, our students score high on knowledge because those are just surface level questions, like they have the knowledge, but it's the application piece. I did see a slight increase in students applying that knowledge."

"We're seeing growth and achievement with our students and we're seeing an increase in scoring comp-checks and things like that."

"But in terms of work quality, I've definitely seen with this curriculum, students have, even at the younger ages in sixth grade, have stronger work on paper that is less guided by what to do, but more so use of multiple strategies on their own."

Data

Data Use

Many coaches reported utilizing different data this year, especially student survey data and teacher observation data, to better understand teacher practices and student engagement.

"...to have students express that in their surveys, particularly for me, I thought those were really insightful. Just not even recognizing the magnitude of how students felt disengaged, I think these are things that we hear about, but I think to actually see it in concrete form was very helpful for me. For presenting that with the teachers like, "This is a major issue," I think having that was very helpful and that's how I used the data in the past year."

"Well, we created an implementation reflection tool that we adapted from [curriculum]. And so that's the data that we use when we go into the classrooms and we look at student learning behaviors, and we look at what teacher actions are, and then of course, we look at if math learning routines and other instruction routines are used. And that data helps drive what we are going to present in our PDs if we're seeing more or less of it."

Data Needs

Whereas coaches reported having access to multiple data in various forms, many reported that there was little comparative data that allowed them to assess how effective the initiative had been, particularly with respect to students' achievement.

"I think a comparative data, some data that's compares, schools that are fully adopting the curriculum to fidelity and whatever measure of data that goes with that academically versus schools that have a blended approach to the curriculum."

"I think schools are still learning what that looks like and identifying which data measure proves what is effective. I think not, I don't think many schools have identified what data point measures its effectiveness of its implementation."

"So, I think that if we had some sort of achievement data that could compare what we're doing right now to what we've done before, and our district has... We're not using the same measures right now as we did with the other curriculum. So, it's comparing apples to oranges right now."

Despite it not being an accurate measure, coaches recognized that critical perspectives often wanted to utilize state achievement test data to assess the effectiveness of the initiative.

"I know that we started trying to look at how it's affected our state scores on the tests that they take. Just from looking at that, I think it's so hard to even break that down because, even if you follow a teacher, you're talking about different kids."

"I think state tests is the marker, but because all schools are in different places in terms of how they implement it is not the best marker."

"I think that, again, it's that achievement data, okay, how much math did I really learn? And the reason that I go down that road is because it's not that I don't think that our kids aren't learning. You still have to be accountable to the people above you. And those folks who make the decisions up there, they want to see that achievement data. How is this better? Why should we invest in this? Why should we put our resources here? So that's what they're going to be looking at."

Coaches reiterated that lack of data is not an issue as much as how to make sense of all the data that has been gathered.

"We do have a ton of data, but I don't think what we did well is we didn't bring people together to have meaningful conversation about what is this data, what does this data mean."

"What I don't think we do well is bringing in stakeholders to make meaning of that data in meaningful ways that can then be shared with others to make decisions and actions. I feel like we have the data."

Sustainability and Scaling

When asked about the sustainability of efforts beyond the grant cycle, most coaches believed that use of the curriculum would continue, but that whether things such as changed teacher pedagogical practices would continue was likely to vary.

"So, I think that components of it will definitely live on in spaces, but again, it was the whole idea of there are a lot of good things there, but I'm not sure we'll be able to sustain a lot of the good things that happen with these content cycles, especially with the internalization."

"I think it'll vary because some administrators are going to take this and put their own tune on it. Some will go in a really awesome direction, and some, it'll depend on who was part of it and how it transpires."

"I would have to agree with that, just in terms of sustainability of the project. The district really prioritized this work, so they implemented systems to allow teachers to get pulled out, coaches to

have training. The fear that I have is that if those systems aren't there, it makes it more challenging to sustain the project. So, the uncertainty is the main barrier to sustainability."

Some coaches believed that teachers needed continued support (additional time) to ensure that grant-supported changes would be sustained.

"I feel, and I don't know if this will answer the question, however it's like we just got the ball rolling and then it's over... But I feel like we just got it going, so it's really hard that it ends."

To address sustainability of teacher practices, multiple coaches reported that districts had tried to build learning communities and site-embedded coaching to support ongoing learning once the grant ended.

"We have to try and build learning communities at the school site so that they can continue this work as a department without external or without coaches coming in, without that, if they're able to build that. And if one person leaves, then they still have that community and those things in place to support that school site. So, I think that is what we have to try to go for to sustain support. It's building sustainability at the site."

Coach Lessons Learned

Communication

Coaches reported that a critical lesson learned was the need for bi-directional (between administrators and teachers), clear, and consistent messaging and communication.

"Communication is key. Our partners are phenomenal at communicating and so clear, concise, and explicit in our agendas..."

"Essential. Just that if we're not communicating consistently and effectively and getting everybody on the same page. Because you have two different groups. You got teachers, you got administrators, and we all have to be on the same page, and they have to have the right information."

"My gut one says communication, communication goes a long way and as many emails as we get through this program, it has been very helpful to make sure that we are all on the same page. We meet regularly, no one's left behind."

Recognizing how important communication is, coaches realized that teachers were often left in the dark about messaging despite being the key to the success of the initiative.

"I think a lesson that I have learned is that we have done a good job of getting in front of the leaders and not as great a job of getting in front of the teachers. I understand that if the leaders are trained, the leaders can take it to the teachers. But I think there are some things that are lost in translation when teachers only hear it from who they perceive to be their, well, I guess a principal is not perceived to be, it is their boss. I think teachers would be more receptive to hearing from either district folks or a lot of the same people that we work with grant work."

"And I know logistically that is hard to do, to get in front of the teachers, but that's something

that I keep hearing.”

“So, with communication, this work has just reinforced a known truth to me, which is we are effective at sharing information down and out. We are not effective at creating cohesive teams of multiple stakeholder groups in which information can flow both ways. And decision-making can be a shared process. That's an area of growth for us.”

Another lesson learned is that communication needs to be crafted together across critical perspectives groups and provided in multiple forms so that it reaches all audiences.

“And then when we do communication now, we make sure that our communication is... We build it together, but then we send it individually to our sites.”

“...just trying to provide so many different forms [of communication], even if it only meets the needs of four people. So, we even built like a Google Classroom. Not everyone uses it, but we have a consistent two to four people that use it, so it's good for someone.”

Fit and Feasibility

Coaches reported that fit and feasibility were critically related to the support provided teachers to learn a new curriculum, both conceptually and from a pedagogical perspective.

“So, I think it is feasible if there is alignment, it's feasible if there is support. And I mean real support. And then I think that the fit is, it's exactly what children should be doing in math. The fit for teachers is awkward because it's not the way ... They probably likely are used to teaching math or have previously learned it. So it's a challenge.”

“So feasibility is, so this is all about alignment, as I think we started talking about in the first question. And it is feasible if the children's instruction is aligned with the teacher content, knowledge, and pedagogy and the principal's accountability mechanisms for it and the district's accountability mechanisms for the schools. If there's alignment, then it is feasible.”

Some coaches did question whether the curriculum best served all student groups such as struggling students, advanced students, younger students, etc.

“Fit and feasibility, I think the program is good, but it's not really a great fit for struggling students or students that are very ahead. It doesn't seem to be a good fit for that. It seems to be a good fit for students who are just kind of at or just below grade level. And for everyone else, it just is not a good pace, not a good fit, that it's so much work to get the supplementary tools and then tools that help to enrich. It's a lot of work for teachers that they just are frustrated with having to go through all that.”

“I just wanted to add that the elementary level really needs to be looked at because of the pacing. And then there's sort of activities that the younger, the lower elementary have shared that they don't really see how that could work out with them for the age level for their students.”

Much of the discussion coaches had around the fit and feasibility of the curriculum reflected concerns they had about the degree to which it did or did not support diverse learners and equity.

“And a lot of this curriculum, it's very word-heavy and very, it's like situational and these story

tasks. And it doesn't look like a standardized test would with multiple choice answers. So, it's a lot of reading ...and a lot of our struggling readers, when they come into math, have a very difficult time accessing the math due to the amount of literacy required."

"I know with [district], there is a high population of English language learners. And while the curriculum gives suggested tools to support that subgroup of students, I feel as if there's not much support or guidance around what are some best practices that everyone should be using to support all learners, especially the English language learners."

Coaches reported trying to better support teachers who work with EC or ELL students to modify aspects of the curriculum to support these students' engagement.

"And I get from my EC perspective or our teachers who have some of the classes that are more at the lower level, that they're always trying to figure out, "How can I modify these questions just a little bit for my students because they're lacking foundational skills that they need?" And so that's been a growth place for us, too."

"Also, a lot of the practices we are doing are creating different experiences to be able to let all students, no matter where their current understanding is, be able to access the information, and be able to be part of the discussion, and feel part of the classroom."

As a result of the curriculum and teachers' more nuanced facilitation, some coaches reported seeing greater engagement among students in math classes, including ELL and EC students.

"More EL students speak about math in a math classroom setting now than prior to this work."

"So, because we were not seeing almost any English learners speaking about math in a math setting or be given opportunities or structures that would facilitate that type of experience, we now see that happening."

"Now, from the gifted perspective, so I think that's another piece to add... I feel like that the discussions are natural for those students. And so that the way that we are constructing that deeper understanding of math gives them a platform to share what they're thinking. The discussions that they have are just amazing. So, I think we've elevated what math instruction looks like for those students."

Coaches believe that the curriculum supports diverse learners as it is based on identifying students' strengths versus focusing on their weaknesses.

"I just felt like there were just more opportunities for them to show diverse ways in which learning or student work could... The connections between mathematics. I know that we did a lot of things with different ways of representing solution path or solution strategies, and I just noticed that there seemed to be more of an acceptance in variety and ways that kids might solve problems and also in incorrect answers, a more of approach towards exploring those misconceptions and understanding where those misconceptions were coming from. So, I think that there was more of that happening, which then I felt like they involved more kids taking risks and engaging in content, versus this is the answer that we are looking for, funneling thinking."

"We really focused on leveraging student background knowledge. So, we're using their strengths

and we're not just teaching them one certain way of solving a problem. We're focusing on more of the process than the product. So, we're seeing kids really embrace being able to just try math problems, try to figure out and problem solve and troubleshoot without worrying about making mistakes. We're using errors as part of the learning process. So, it was a huge shift at my site because our parents are really grade-oriented and going into a type of pedagogy where it's process-oriented was a shift, but it's really resulted in a positive impact."

Team Functioning

Coaches reported that a critical lesson learned related to team functioning is that all team members need to share the same vision and goals and how to achieve them, in other words, be "mission-aligned".

"So the lesson is that there has to be a team that are mission aligned, that have also aligned indicators because you could be going for the same goal, but if it looks differently to different people, then there's going to be a disconnect. So I think the team as a unit is necessary. And as I mentioned before, at all levels, at the school level, the district level, and between those levels."

"I think I've learned that for it to be effective, all participants have to have and understand the same goal and all of the components that it takes to have that goal achieved."

Multiple coaches also noted that for teams to function well, the providers have to understand school, district, and state contexts, and work to meet their needs versus asking schools, etc. to change.

"They modified everything. They fit into us instead of us trying to fit into what they were doing, and that was the best part. I think that's what made it easy to work with them and easy to understand what we're trying to do because they fit into our world instead of us fitting into theirs."

"From the very beginning, they [the partner organization] always felt like partners They were very inclusive, they were very open. I never felt like they were necessarily trying to funnel anything to us, but they were really listening and then making adaptations, modifications, adjustments based on what teachers were saying, what we were saying, and it was a great partnership. So, I do want to say that very loudly and clearly. I'm going to be honest, 25 years, it was the best partnership that I've worked with..."

Appendix A: Participant Demographics

Table 1. Description of Provider Role (N=15)

Provider Role	%
Academic Officer/Director	80
Associate Academic Officer/Director	7
Coach	7
Partnership Manager	7

Note: percentages do not equal 100 due to rounding.

Table 2. Provider Demographics (N=15)

Provider Demographics	%
10-14 years in profession	13
15-19 years in profession	47
20 years or more in profession	40
1 year in current role	27
2 years in current role	27
3 years in current role	13
5 years or more in role	33
Female	80
Male	7
Non-Binary	13
Hispanic or Latino/a	7
Non-Hispanic or Latino/a	93
Asian	13
Black	20
White	67
Master's degree	80
Doctorate	20

Table 3. Description of Executive Sponsor Role (N=19)

Executive Sponsor Role	%
Academic Officer/Director	74
Assistant/Associate/Deputy Superintendent	16
Implementation Support Specialist	5
Superintendent	5

Table 4. Executive Sponsor Demographics (N=19)

Executive Sponsor Demographics	%
15-19 years in profession	16
20 years or more in profession	84
1 year in current role	32
2 years in current role	21
4 years in current role	26
5 years or more in role	21
Female	84
Male	11
Non-Binary	5
Hispanic or Latino/a	26
Non-Hispanic or Latino/a	74
Asian	5
Black	26
Multi-racial	5
White	53
Other	11
Master's degree	37
Doctorate	58
Other	5

Note: percentages do not equal 100 due to rounding.

Table 5. Description of Coach Role (N=33)

Coach Role	%
Coach	45
District Support	9
Math/Curriculum Coordinator	18
Program Specialist	27

Note: percentages do not equal 100 due to rounding.

Table 6. Coach Demographics (N=33)

Coach Demographics	%
5-9 years	6
10-14 years in profession	18
15-19 years in profession	21
20 years or more in profession	55
1-4 years in current role	79
5 - 9 years in role	12
10-15 years in role	9
Female	70
Male	30
Hispanic or Latino/a	15
Non-Hispanic or Latino/a	85
American Indian or Alaska Native	3
Asian	12
Black	27
White	52
Other	6
Bachelor's degree	12
Master's degree	82
Doctorate	6

Appendix B: Provider Interview Protocol

Implementation Barriers and Facilitators

(LQ M.4)

1. What do you think are the factors that maximize the successful implementation of the math curriculum? How did you come to identify those factors? *(i.e., How did they come to recognize or realize it? Who, if anyone, brought it to their attention? What made them first think this was an important factor that was helping?)*

(LQ VII.3.)

2. What barriers have you or your LEA encountered so far that hinder the successful implementation of the math curriculum? How did you come to identify those barriers? *(i.e., How did they come to recognize or realize it? Who, if anyone, brought it to their attention? What made them first think this was an important barrier?)*
 - a. *Probe:* How, if at all, have changes in leadership impacted the implementation of the math curriculum?
 - b. *Probe:* How, if at all, has your district's process of identifying leadership (i.e., appointing or electing your superintendent) had an impact on implementation?
 - c. *Probe:* How, if at all, has your LEA's geographic location had an impact on implementation?

Impact

(LQ M.4)

3. How has the math curriculum implementation impacted the way students learn and engage with math?
 - a. **If necessary**, probe:
 - i. In terms of achievement?
 - ii. In terms of classroom engagement (i.e., motivation and participation in math)?
 - iii. In terms of math enjoyment (i.e., interest, liking, valuing, enjoyment, or curiosity of mathematics)?
 - iv. In terms of growth mindset (belief that mathematics abilities can be developed and improved through work, practice, strategies, and input from others)?
 - v. In terms of math self-efficacy (i.e., confidence in solving math problems and performing math-related work)?

Supports and Practices

(VII.4.LQ)

4. "Of all the support you provided, what was the most helpful/worked best? What was the least helpful?"

Data

(LQ M.2; M.3)

5. Now that this grant is in the third year, what needs do you still have regarding measures related to the curriculum and/or related to the implementation of the curriculum?
6. How has your ability to make use of data changed in the past year? What were the drivers of that?
 - a. **If they only focus on student or intervention data**, probe for implementation data.
 - b. **If necessary**, probe for changes in using data, sharing data, perceptions around usability of data, and ability to take action with data.

Spread and Sustainability

(Scaling–Spread; LQ AOEP.2)

7. Has your LEA increased or decreased the number of Schools? Grade levels? Classrooms? Teachers? implementing the curriculum since the start of the EIC project?
 - a. If yes, what factors have driven the decision to increase or decrease the number of schools/grade levels/classrooms/teachers using the curriculum?
 - b. If yes, what are some key lessons learned around this increase or decrease?

(Sustainability)

8. How is your LEA going to sustain support for a high-quality mathematics curriculum after the grant ends?

Lessons Learned

9. Now that you have been in the project for three years, please share the top lessons learned around effective implementation of the math curriculum.
 - a. **After** they respond, please ask about lessons learned related to:
 - i. Fit and feasibility
 - ii. Data measurement;
 - iii. Communications; and
 - iv. Team functioning (with districts, partners, Exec Sponsor)?

Closing: Before wrapping up our interview, is there anything additional that I missed or you would like to add related to the BMGF Effective Implementation Cohort project?

Appendix C: Executive Sponsor Interview Protocol

Implementation Barriers and Facilitators

(LQ M.4)

1. What do you think are the factors that maximize the successful implementation of the math curriculum? How did you come to identify those factors? *(i.e., How did they come to recognize or realize it? Who, if anyone, brought it to their attention? What made them first think this was an important factor that was helping?)*

(LQ VII.3.)

2. What barriers have you or your LEA encountered so far that hinder the successful implementation of the math curriculum? How did you come to identify those barriers? *(i.e., How did they come to recognize or realize it? Who, if anyone, brought it to their attention? What made them first think this was an important barrier?)*
 - a. *Probe:* How, if at all, have changes in leadership impacted the implementation of the math curriculum?
 - b. *Probe:* How, if at all, has your district's process of identifying leadership (i.e., appointing or electing your superintendent) had an impact on implementation?
 - c. *Probe:* How, if at all, has your LEA's geographic location had an impact on implementation?

Impact

(LQ M.4)

3. How has the math curriculum implementation impacted the way students learn and engage with math?
 - a. **If necessary**, probe:
 - i. In terms of achievement?
 - ii. In terms of classroom engagement (i.e., motivation and participation in math)?
 - iii. In terms of math enjoyment (i.e., interest, liking, valuing, enjoyment, or curiosity of mathematics)?
 - iv. In terms of growth mindset (belief that mathematics abilities can be developed and improved through work, practice, strategies, and input from others)?
 - v. In terms of math self-efficacy (i.e., confidence in solving math problems and performing math-related work)?

Supports and Practices

(VII.4.LQ)

4. Of all the support you received, what was the most helpful? What was the least helpful?
 - a. *Probe:* From whom did you receive that support?

5. Of all the support you provided, what was the most helpful/worked best? What was the least helpful?

Data

(LQ M.2; M.3)

6. Now that this grant is in the third year, what needs do you still have regarding measures related to the curriculum and/or related to the implementation of the curriculum?
7. How has your ability to make use of data changed in the past year? What were the drivers of that?
 - a. **If they only focus on student or intervention data**, probe for implementation data.
 - b. **If necessary**, probe for changes in using data, sharing data, perceptions around usability of data, and ability to take action with data.

Spread and Sustainability

(Scaling–Spread; LQ AOEP.2)

8. Has your LEA increased or decreased the number of Schools? Grade levels? Classrooms? Teachers? implementing the curriculum since the start of the EIC project?
 - a. If yes, what factors have driven the decision to increase or decrease the number of schools using the curriculum?
 - b. If yes, what are some key lessons learned around this increase or decrease?

(Sustainability)

9. How is your LEA going to sustain support for a high-quality mathematics curriculum after the grant ends?

Lessons Learned

10. Now that you have been in the project for three years, please share the top lessons learned around effective implementation of the math curriculum.
 - a. **After** they respond, please ask about lessons learned related to:
 - i. Fit and feasibility
 - ii. Data measurement;
 - iii. Communications; and
 - iv. Team functioning (with districts, partners, Provider)?

Closing: Before wrapping up our interview, is there anything additional that I missed or you would like to add related to the BMGF Effective Implementation Cohort project?

Appendix D: Coaching Listening Session Protocol

Implementation Barriers and Facilitators

(LQ M.4)

1. What do you think are the factors that maximize the successful implementation of the math curriculum? How did you come to identify those factors? *(i.e., How did they come to recognize or realize it? Who, if anyone, brought it to their attention? What made them first think this was an important factor that was helping?)*

(LQ VII.3.)

2. What barriers have you or your LEA encountered so far that hinder the successful implementation of the math curriculum? How did you come to identify those barriers? *(i.e., How did they come to recognize or realize it? Who, if anyone, brought it to their attention? What made them first think this was an important barrier?)*
 - a. *Probe:* How, if at all, have changes in leadership impacted the implementation of the math curriculum?
 - b. *Probe:* How, if at all, has your district's process of identifying leadership (i.e., appointing or electing your superintendent) had an impact on implementation?
 - c. *Probe:* How, if at all, has your LEA's geographic location had an impact on implementation?

Impact

(LQ M.4)

3. How has the math curriculum implementation impacted the way students learn and engage with math?
 - a. **If necessary**, probe:
 - i. In terms of achievement?
 - ii. In terms of classroom engagement (i.e., motivation and participation in math)?
 - iii. In terms of math enjoyment (i.e., interest, liking, valuing, enjoyment, or curiosity of mathematics)?
 - iv. In terms of growth mindset (belief that mathematics abilities can be developed and improved through work, practice, strategies, and input from others)?
 - v. In terms of math self-efficacy (i.e., confidence in solving math problems and performing math-related work)?

Supports and Practices

(VII.4.LQ)

4. Of all the support you received, what was the most helpful? What was the least helpful?
 - a. *Probe:* From whom did you receive that support?

5. Of all the support you provided to teachers, what was the most helpful/worked best? What was the least helpful?

(M.4.0)

6. Based on what you have heard or observed from teachers, what practices have teachers found to be effective when teaching the curriculum?

Data

(LQ M.2; M.3)

7. Now that this grant is in the third year, what needs do you still have regarding measures related to the curriculum and/or related to the implementation of the curriculum?
8. How has your ability to make use of data changed in the past year? What were the drivers of that?
 - a. **If they only focus on student or intervention data**, probe for implementation data.
 - b. **If necessary**, probe for changes in using data, sharing data, perceptions around usability of data, and ability to take action with data.

Spread and Sustainability

(Scaling–Spread; LQ AOEP.2)

9. Has your LEA increased or decreased the number of Schools? Grade levels? Classrooms? Teachers? implementing the curriculum since the start of the EIC project?
 - a. If yes, what factors have driven the decision to increase or decrease?
 - b. If yes, what are some key lessons learned around this increase or decrease?

(Sustainability)

10. How is your LEA going to sustain support for a high-quality mathematics curriculum after the grant ends?

Lessons Learned

11. Now that you have been in the project for three years, please share the top lessons learned around effective implementation of the math curriculum.
 - a. **After** they respond, please ask about lessons learned related to:
 - i. Fit and feasibility
 - ii. Data measurement;
 - iii. Communications; and
 - iv. Team functioning (with partners, Exec Sponsor)?

Closing: Before wrapping up our listening session, is there anything additional that I missed or you would like to add related to the BMGF Effective Implementation Cohort project?