Scalable Systems for Adult Capacity Building

Translating Sierra House Elementary School's Pilot Practices Across Lake Tahoe Unified School District

Benjamin W. Cottingham and H. Alix Gallagher

This case study examines efforts by Lake Tahoe Unified School District (LTUSD) to improve math instruction districtwide, starting with a focused pilot at Sierra House Elementary School. Initially responding to stagnating test scores, LTUSD developed a strategy with its external partner California Education Partners (Ed Partners), which centered on capacity building by developing pacing guides, essential standards, and open-ended math tasks. Despite initial challenges, Sierra House piloted the use of these resources to create a collaborative system for analyzing student learning and refining instructional strategies. While the district faces barriers to districtwide scaling, the Sierra House model serves as a blueprint for building adult capacity and fostering instructional coherence. The study highlights the roles of leadership, strategic resource use, and collaborative structures in improving math instruction and scaling practices across a decentralized district.

Districts in California (and across the country) work hard to improve instruction and student outcomes. Many attempts at new reforms fail to achieve their desired outcomes, however, and are rapidly replaced by new initiatives. California Education Partners has been developing an approach that supports districts in building systems that help break the cycle of endless waves of short-lived change, positioning districts to scale solutions beyond the end of a traditional technical assistance partnership. This three-part series of briefs describes Ed Partners' approach and how it helped two districts identify areas to strengthen their systems for teaching and learning, implement pilot strategies to address those areas, and begin scaling improvements districtwide.

PACE
Policy Analysis for California Education

December 2024

Introduction

During the fall of the 2021–22 school year, the new superintendent and assistant superintendent of Lake Tahoe Unified School District (LTUSD) identified a pressing need to improve math teaching and learning in the district. Test scores had shown that math performance had stagnated, remaining at or below the state average for several years. California Assessment of Student Performance and Progress (CAASPP) testing in spring 2021[1] showed that the proportion of students meeting standards in mathematics had declined over the elementary grades, such that in fifth grade only about 24 percent of students met or exceeded standards (compared to 32 percent for the state as a whole). In English language arts, by contrast, LTUSD students outperformed the state, and proficiency did not decline through the upper elementary grades. Long-serving staff revealed that training or support in math instruction had been on the back burner under the prior administration and acknowledged the need to reprioritize math teaching and learning.

The new district leadership sought to improve math teaching and learning systematically across all sites, but the district had historically taken a decentralized approach to professional development: Each site selected its own focal areas for professional development (e.g., language arts, mathematics) every year. Additionally, the district had only one math content specialist (CSP)—a long-serving high school math teacher—who was responsible for serving all schools, which did not provide the level of resources necessary provide deep support to all relevant teachers. Finally, there was no system or culture for setting district expectations and then ensuring that those expectations were implemented at school sites.

This case describes how LTUSD started with the conviction that it needed to improve math teaching and learning districtwide and provided the resources for one of its schools, Sierra House Elementary School. To this end, the district elected to work with California Education Partners (Ed Partners) as a part of the Preschool through third grade Coherence Collaboration (P3CC). This collaboration brought together districts from across California to examine and ultimately improve their district systems to better support coherent mathematics teaching and learning from preK through third grade. Ed Partners supports districts with creating and leading teams to investigate their existing systems for math instruction in the early grades and testing changes to those systems that are based in research-defined best practices. The principal at Sierra House jumped into the work with both feet, making the school the de facto pilot site for the district. Sierra House serves students that are representative of the overall district, which makes it an ideal site to pilot an approach to improving elementary mathematics instruction that could then be scaled across the district system.

District Characteristics

8 schools

- **4 elementary schools**
- **1 middle school**
- **1 high school**
- **1 alternative school**
- **1 continuation school**

3,777 total enrollment

57.4 percent unduplicated
14.2 percent special education
17.8 percent English learners
45.6 percent Latinx
45.8 percent White

Source. All district demographic data retrieved from Education Data Partnership.[2]

This study is informed by eight interviews with LTUSD employees (including two teachers, two district office staff, and two principals); six interviews with their Ed Partners program managers (PMs); notes from observing Ed Partners' P3CC convenings from 2021 to 2024; and various artifacts, such as the P3CC team work deck, protocols from monthly examinations of teaching and learning, student outcomes data shared by the district, and observations of Sierra House's monthly math collaboration days examining student work and the learning-lab process.

Lake Tahoe's P3CC Mathematics Journey

This section gives a chronological timeline of the work of the P3CC team in LTUSD. It describes the work's evolution, including its challenges, key strategies, and turning points.

The district created districtwide expectations for math instruction and had a plan for supporting staff to implement them, but barriers narrowed the work to a single school.

The district office started by tasking the math CSP with drafting essential standards and pacing guides. Relying heavily on Marzano Resources' Critical Concepts,[3] the CSP drafted initial versions of the pacing guides and essential standards for math vertically sequenced from K–12 for teachers and administrators.

But she quickly realized there were no district processes that could introduce these documents to all teachers, much less provide them with support to engage with them meaningfully. The district decided to seek external support to achieve its goals.

The district joined Ed Partners' P3CC in 2021 and selected a P3CC team, naming the assistant superintendent as the team lead (to signal the importance of the work). The other team members were the math CSP and teachers from three of the four elementary schools in the district (to build ownership of the work across multiple schools). However, there were immediate challenges because teachers from schools where the priority was something other than mathematics (e.g., writing) did not see the work as aligned with school goals and did not regularly attend meetings. Additionally, staffing changes—retirements due to COVID-19 interruptions, reallocation of staff to other sites, and changing roles within the district—at each site affected participation.

With all this turmoil, the first year of the P3CC did not go as planned. The LTUSD team skipped one of the Ed Partners convenings and, by the end of the year, participating teachers came almost solely from one school, Sierra House. (A single teacher at Bijou Community School remained a part of the team at the end of the first year.) The district was forced to refocus its efforts on just Sierra House, putting the original goal of districtwide improvement on the back burner. The principal of Sierra House strongly committed to improving math instruction, making it the primary improvement focus at the school and using the resources created by the math CSP with the support of Ed Partners, so the P3CC work moved forward, though on a different trajectory than originally intended. Out of necessity, a new strategy emerged of developing effective systems to improve math instruction at a single, committed site, systems that could then be scaled districtwide.

During the second year, the math CSP worked with the team at Sierra House to develop shared expectations for math teaching and learning and to build teachers' skills for delivering instruction that met those expectations.

To support Sierra House during LTUSD's second year of P3CC, the math CSP joined monthly staff meetings and, at the request of teachers and the principal, provided additional individualized coaching to teachers around math instruction. The CSP had two goals for what would be accomplished with the intensive time. First, she wanted teachers to engage deeply with the resources she had created: the essential standards, pacing guides, and progression scales that vertically sequenced standards across the elementary grade levels. Second, she wanted to get feedback that she could use to improve these documents as teachers tested them in their own practice. The ongoing discussion of the pacing guides and essential standards among the CSP, teachers, and administration in monthly staff meetings and through coaching with grade-level teams slowly solidified a shared expectation across the school about what students were expected to learn. These conversations gave the staff time to engage with and react to the materials, laying the foundations for ownership of the materials and trust that the P3CC

team would need to examine instruction more deeply. However, a gap remained to achieving the goal of improving instruction. There was agreement around *what* would be taught, but there needed to be clear expectations for *how* teachers would provide instruction that would help students meet the standards.

As the CSP shared the new math instructional materials with the staff at Sierra House, the P3CC team, with the support of its Ed Partners PM, introduced the use of open-ended math tasks in the monthly staff meetings to improve staff's teaching of the given standards. Open-ended math tasks are one of the instructional strategies that Ed Partners exposes P3CC teams to under the common effective practices Fundamental (see the brief *Taking Reform to Scale: Learning from California Education Partners' Collaborations* for more information). Although multiple types of math tasks are considered to be open-ended, all open-ended math tasks share the following features: they provide multiple entry points and approaches or strategies for solving; they draw on students' cultures and languages and include relevant contexts; they support access and flexible thinking; they encourage the use of different representations and tools; and they engage students in exploration and problem-solving to build knowledge. For example, a common type of open-ended task is story problems, which invite multiple solution strategies. Sierra House focused on open-ended tasks more broadly, including two specific open-ended tasks: counting collections and choral counting.

- **Counting collections:**[4] In this open-ended counting activity, teachers give students a so-called collection of objects to count. Children choose how to organize and count the collection and how to represent their count to show how and what they counted. The teacher circulates around the classroom to listen to students count, have instructional conversations to understand students' strategies, and press their thinking when appropriate. The teacher may choose to elevate for the whole group specific strategies that students are using. This strategy was a major focus at Ed Partners' convenings and shared learning opportunities for the P3CC collaboration that LTUSD joined.
- **Choral counting:**[5] In this open-ended counting activity, the teacher decides on a number for the students to skip count by, whether to count forward or backward, and what number to start and end the count on. The teacher leads children in counting aloud together by that number. The teacher records the count on the board as children count, pausing at strategic moments to engage children in reasoning, predicting, and justifying.

These instructional strategies were chosen because they build students' conceptual mathematical understandings, provide more opportunities for students to communicate or demonstrate their conceptual understanding of math skills, and elicit student thinking so that teachers can get a more refined understanding of students' current mathematical knowledge as well as what they still need to learn. These types of strategies have been shown to lead to more consistent and significant learning gains.[6] The team engaged in ongoing conversations to establish aligned expectations of what these strategies look like in practice, using their conversations about essential standards from the previous years as a model.

Using the existing pacing guides, essential standards, and curricula, the math CSP determined where teachers had the best opportunities to employ these strategies in place of low-rigor lessons within the curricula. One district leader described the CSP's work and the impact of clearly defining the *what* and *how* of instruction while also identifying *where* those changes could be made with the existing curricula:

> *[The CSP] has gone through each grade level, K–5, and looked at each of the units and has identified what's most crucial, what's most important, has given people permission to skip various components [that are less important,] and gives a little narrative on what's most important for this unit here. I think with the use of those documents, we're giving folks permission to not [use the textbook by rote,] worry[ing] about page one today, page two tomorrow, and page three on Wednesday, and [instead] to really take a look at it as one full unit and realiz[e] what's most important. … [Teachers] are going to have time to do the [open-ended] math practices and try to substitute out some of [the] mundane, probably low-level learning activities with something more productive.*

The work that the math CSP did developing and refining the essential standards and pacing guides and examining the alignment of the existing curriculum was critical for the staff at Sierra House to move forward. She laid the groundwork for Sierra House's "professional curriculum" for math by "identifying both the content to be taught" —the essential standards—"and the ways to teach that content"—the selected instructional strategies.[7] The pacing guides and essential standards helpfully narrowed the scope of *what* Sierra House was going to prioritize. The selected instructional strategies further specified *how* teachers would change their math instruction. The math coach then refined and built on the essential standards and pacing guides with unit plans that provided guidance to teachers for *where* these instructional shifts could take place. All together, these actions clearly defined the school's professional curriculum and aligned expectations across the school, but teachers and administration still needed to internalize the shared expectations and build their abilities to use the strategies successfully.

Beginning in the second year of the work, the principal, with the support of the math CSP and P3CC program manager, established the math collaboration days process so that teachers could collaboratively analyze student work and design instructional tasks aligned to the shared expectations.

With decisions about the *what*, *how,* and *where* of instruction made, the principal needed to develop an approach to support her staff with making these shifts in teaching. Just as teachers must create an environment conducive for students to learn, instructional leaders must do the same for teachers—giving teachers the freedom to try new practices, safe spaces to offer and receive feedback, and opportunities to refine their skills.[8] The principal created a 2-hour process—1 hour on two consecutive days—for teachers to analyze student work on common tasks and then plan the following month's common task based on the evidence of student learning. To do this, she reallocated her 2 hours of monthly staff meeting time (which teachers were contractually required to attend) for teacher professional development. (See the text box for more information.)

Sierra House's Math Collaboration Time

The 2-day process included bringing grade-level teams together—with support from the district math CSP as needed—to build their collective understanding of the essential standards, create shared tasks centered on those standards, and evaluate the impact of instruction as evidenced by student work and other monitoring data. On the first day, teacher grade-level teams brought student work from the previous month's common task that was developed in alignment with the essential standards to analyze together. The second day then focused on developing or refining the common task for the following month's essential standards.

Day 1: Critical concepts and student work analysis	Day 2: Planning common grade-level tasks
• Bring student work from an agreed-upon learning task, including from the common learning task and any supplemental learning opportunity data, such as i-Ready. • Evaluate student work for evidence of correct answers and discuss the instructional strategies used. • Reflect on shared understanding across teams of what mastery of the selected essential standard looks like, after examining student work.	• Examine essential standard(s) for upcoming months and build collective understanding of their meaning. • Design a shared learning task that all teachers on the grade-level team agree to administer before the next all-staff meeting.

The principal kept the process manageable, ensuring that teams could complete it in an hour after school, with only slight tweaks along the way to deepen reflective questioning as teachers became more comfortable. When grade-level teams were unable to meet, teachers worked across grade levels to examine student work and develop a shared understanding of standards in subsequent grades.

This 2-day all-staff process has become a foundational activity at Sierra House, centered on the resources that the CSP has developed to support high-quality math teaching and learning. The principal explained how the staff meetings now revolve around the resources provided by the math CSP:

> *Our math content specialist has done a lot of work. … She … guides our conversations. … She puts together for each grade level a synopsis of what the standard is, and what we need to be approaching in the standard. And then she highlights … some ideas on how you can teach it and how you can do different strategies with it. … [R]ight after that, we look at a common task that we designed for the last month, and how we bring our own work and reflect on it at each grade level. And then we design a task for the next month, based on what we just learned, where we've unpacked the day before. So that's … our routine that we've gotten into.*

The math resources developed by the CSP provide clarity around what the essential standards are and how the two focal strategies can support instruction of those standards as grade-level teams develop and analyze their common tasks.

The principal's most important contribution was using her authority over the school's schedule to find a consistent time when all teachers could be required to participate and when administration could set the agenda (as opposed to closed professional learning community meetings, which exist in teacher contracts in some California districts, where school and district leaders have minimal visibility into how teachers use the time). By converting the staff meeting time—which the teacher contract gave her control over—for use in improving instruction, the principal made conversations about instruction inevitable. The principal views her role during this time as a facilitator—designing protocols for grade-level team conversations, providing feedback to teams, and making resources available—not as an evaluator. Because of how the principal engages, most of the teachers have come to see this as a safe learning space. Peers rely on one another for success, creating a collective responsibility to support the learning of all students, and inaction by any teacher deprives both their peers and their students of valuable learning opportunities.

During the third year of the work, the principal added a learning lab structure to provide a space for teachers to observe one another's instruction, which deepened the school's shared expectations of high-quality instructional practices and collective understanding of how to support students' learning progressions in math.

The 2-day all-staff meeting provided a process for reflecting on student learning and planning common math tasks, but Sierra House also needed a way to support teachers with implementing the new instructional practices in their classes. The principal knew that teachers observing one another's teaching and getting feedback that was interpretive and analytical rather than evaluative could help build agency and teacher ownership over instructional materials and practices.[9]

The principal first tried a process where teachers took turns planning a model lesson aligned to the standards and pacing plan and using one of the focal effective strategies. Teachers would then demonstrate their model lesson for their peers, who gave them feedback on the lesson. However, teachers felt put on the spot and isolated as others came to observe their lesson without prior co-planning or support. In response, the principal shifted to what she calls a learning lab, where teachers prepare lessons collaboratively with their peers and instructional leadership, implement the lessons, and then debrief to refine the approach before the next teacher takes a turn presenting the revised lesson to their class. This approach, modeled on the Japanese lesson study model,[10] occurs during the school day and positions all participating teachers as active learners who collaboratively select the content and instructional practice to be observed from within the agreed-upon math practices and essential standards. The teachers take turns implementing the strategy as well as giving feedback to and receiving feedback from one another.

Both the teachers and the instructional leaders shared that the learning lab structure deepens their understanding of counting collections and choral counting within the context of the district's essential standards while fostering ownership as teachers tailor the practices to their own teaching styles and classroom needs. Two instructional leaders—the principal and the math CSP—as well as the Ed Partners PM attend all learning labs to monitor implementation of instructional strategies across the school and provide feedback during the lesson-planning phase and after each lesson is delivered. In Year 3, Sierra House invited teachers from Bijou Community School (including a transitional kindergarten teacher who was added to the team during Year 2) to join learning labs across grade levels. Having teachers from two school sites has fostered a greater understanding of how standards and instructional strategies progress as students' math abilities develop, which has supported teachers in differentiating instruction and meeting student needs based on their responses to the selected instructional strategies.

During Year 3, LTUSD secured resources to facilitate the spread of the adult capacity-building practices developed at Sierra House to other schools in the district—including resources from El Dorado County Office of Education (EDCOE).

Over the 3 years of the P3CC work in LTUSD, district leaders had taken several steps towards their initial idea of improving elementary math instruction: (a) the CSP had drafted essential standards and pacing plans and revised them based on teacher feedback; (b) Sierra House had a process for digging into the essential standards and pacing plans, analyzing student work on common tasks, and formatively assessing student progress towards those standards; and (c) Sierra House had a process for improving the effectiveness of teachers' implementation of shared, research-based instructional practices in mathematics. During the third year of P3CC, the district decided to return to its original goal of districtwide improvement by spreading Sierra House's approach to other schools in the district.

To spread learning from a single pilot site to others, the district must provide the resources and develop a strategy for scaling the work.[11] The P3CC team created a plan to share the strategies they had learned and those strategies' impact on student learning with other school sites. With the support of the district office, the P3CC repurposed existing district resources (e.g., all-district fall professional development days focused on P3CC content and learning from the Sierra House team). The district office also opportunistically secured additional resources—that unexpectedly became available from EDCOE—to help spread the work.

First, LTUSD brought in Dr. Megan Franke, a national leader and expert in cognitively guided instruction in early math in particular counting collections. Dr. Franke and her team from the University of California, Los Angeles, introduced the high-quality instructional practices that the pilot school had adopted during the fall 2023 all-staff professional development day. Next, the district leadership, the Ed Partners PM, and the Sierra House principal created time for the multiple teams focused on math instruction to collaborate and share learnings and best practices across sites. Additionally, a meeting for all four elementary school principals was established to discuss the strategies they were using to build adult capacity in math instruction. Finally, the district provided resources for staff to attend various

math-instruction trainings aligned with the P3CC work as well as the National Council of Teacher of Mathematics annual conference. These actions combined provided multiple avenues to expose other sites to the district's expectations for math instruction, high-leverage math instructional strategies, and the math collaboration day process developed at Sierra House and then to put them into practice.

The district was helped by the fact that, at the beginning of the 2023–24 school year, EDCOE launched two collaborations with Ed Partners for districts in the county that focused on improving coherent math instruction. The first was another P3CC collaboration, which the district staffed primarily with principals and teachers from two of the three remaining elementary schools—including more staff from Bijou Community School—as well as the math CSP and select staff from the original team. The second collaboration, known as 8/9 On-Track, brought the middle and high schools, along with the same math CSP, into the conversation about coherent math instruction between eighth and ninth grade so that students were on track to graduate ready for college and career. The new P3CC team was able to build on the refined essential standards, pacing guides, and unit plans produced by the district and the Sierra House P3CC team, while the 8/9 On-Track team began examining these resources across the middle and high school grades. The district aimed to facilitate the creation of shared language and expectations for math instruction by cross-pollinating the new P3CC team with members from the original team, creating spaces for those teams to engage with each other, providing opportunities for principals to communicate, and continuing to provide individualized coaching as needed via the math CSP.

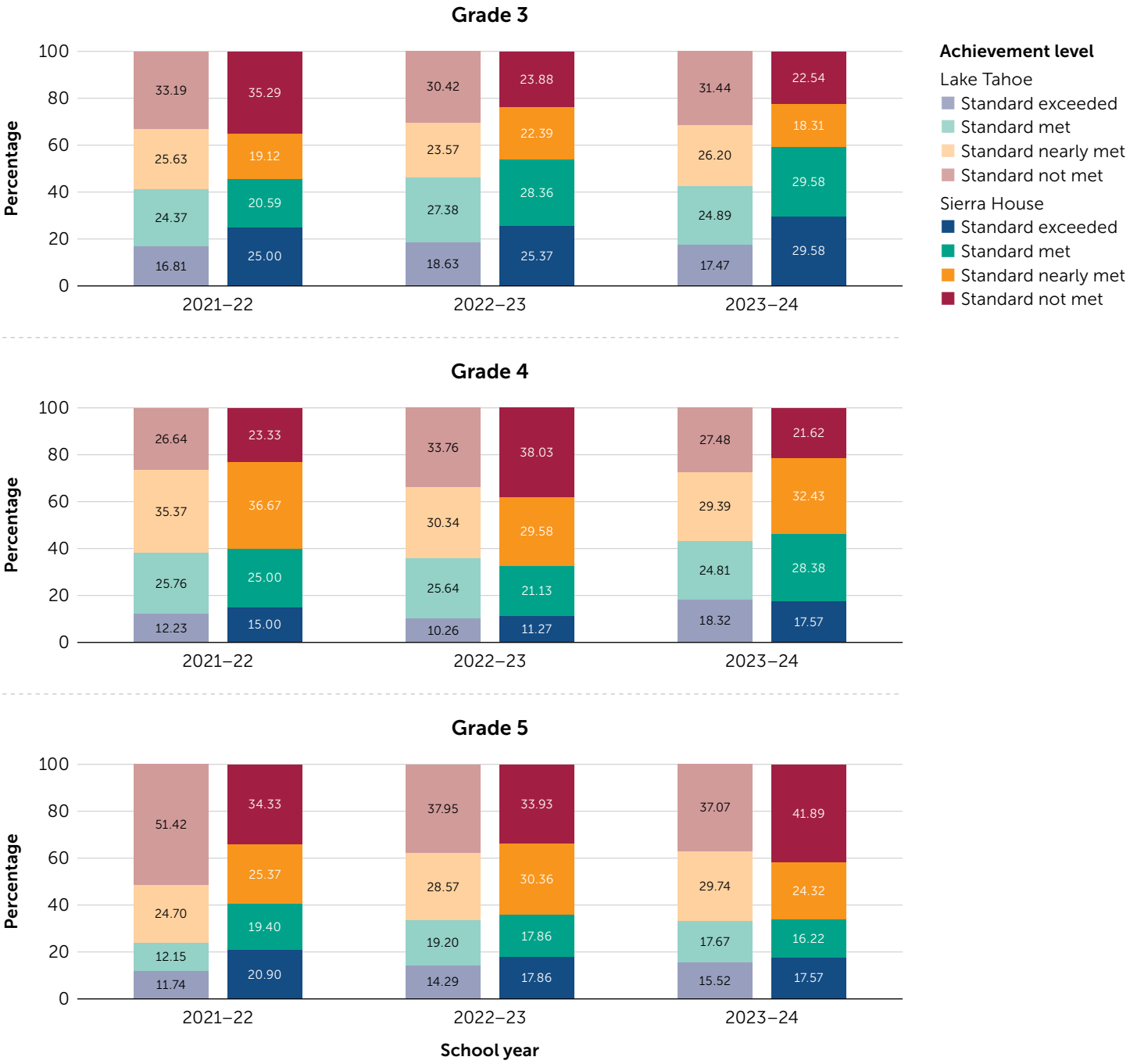
While Sierra House offers examples of school-based, collaborative, and data-driven professional development for math instruction, a districtwide system for adult capacity building has not yet been established. However, the district has provided the resources to initiate conversations about coherent high-quality math teaching and learning across multiple schools. As a result of these efforts, three elementary schools as well as the middle and high schools in LTUSD entered the 2024–25 school year with teams actively engaged in improving math teaching and learning centered on the district's essential standards, pacing guides, and unit plans.

Sierra House saw improvement in students' achievement in math after 2 full years of the math collaboration day process.

LTUSD developed its approach to improve math teaching and learning from 2021 through 2024 with a team that included the principal of the pilot school, Sierra House, as well as teachers from transitional kindergarten (TK) through third grade and the district math CSP. As a result of these efforts, Sierra House has seen the performance of student cohorts begin to improve in mathematics over the past 3 years, as evidenced in CAASPP data (see Figure 1). In particular, those students at Sierra House who experienced multiple years of instruction from teachers piloting identified practices and engaging in ongoing capacity building for mathematics instruction appear to be improving at a faster rate than students in LTUSD as a whole. (For example, third graders in 2022–23 and 2023–24 and fourth graders in 2023–24 would have had at least 2 years of instruction from participating teachers from TK through third grade once COVID-19 closures ended in 2021–22.) Sierra House third-grade scores improved by 13.7 percent

between 2021–22 and 2023–24, and fourth-grade scores improved by 6 percent. Fifth-grade scores representing students who had spent less time with teachers piloting the new strategies declined 6.5 percent compared to the district overall, which improved 1.2 percent in third grade, 5.1 percent in fourth grade, and 9.3 percent in fifth grade.

Figure 1. Math Performance Comparison of Lake Tahoe Unified School District and Sierra House Elementary School, Grades 3–5



Sierra House staff uses student work from the grade-level math tasks alongside the newly piloted i-Ready system to gather interim student learning data. Several teachers began the pilot of i-Ready in the 2022–23 school year, and full school implementation began in 2023–24. These data have provided Sierra House with more information to monitor the impact of instructional strategies on student outcomes and identify specific teacher practices in the math collaboration days and learning labs that have best supported student learning. The piloted approach to monitor and improve math teaching and learning now includes all grades at Sierra House, and with district support, the approach is beginning to emerge in other school sites.

Key Takeaways

LTUSD is in the process of spreading the piloted math instructional practices from Sierra House to other elementary schools in the district. Current student-outcome data show initial gains in student math learning, and there are clear changes in practice that demonstrate evidence of progress towards a systematic way to analyze student learning and adjust instruction to meet student needs better. This section describes key takeaways from the Sierra House pilot and subsequent district spread and outlines plans to sustain these principles moving forward.

The monthly math collaboration days made conversations about instruction inevitable and continue to serve as the primary vehicle for building adult capacity at the pilot site.

Creating documents about expectations or providing resources to improve math instruction are insufficient on their own to build adult capacity systematically. Teachers need opportunities to engage meaningfully with new ideas to transfer those ideas into their practice. There must be opportunities for teachers to (a) collectively examine expectations for students in their classrooms, supporting consistency across and within grade levels; (b) make meaning of any differences between current and desired instructional practices; and (c) practice using new instructional strategies and resources with opportunities for feedback.[12]

When LTUSD began its P3CC work, no systems were in place to build adult capacity at scale. In fact, the professional norms in LTUSD generally supported teacher and school autonomy more than collaboration and coherence. The principal and the Ed Partners PM worked to find an available space for teachers to have regular conversations about instruction and developed protocols that focused teacher analysis of student learning on essential standards and the selected instructional strategies. They also realized that they could not require additional time from teachers, so instead they needed to identify existing time and reallocate it to support improved instructional quality and coherence. The PM explains the conversation she had with the principal to identify these resources:

Where are the places and spaces you all have right now? Given that, let's build that structure. … What are some of your goals this year, and how do we make that a reality given the structure that you have? … I would say leveraging what they have first. … What is your locus of control? What can you impact? What can you change? … [T]his is where we're starting, right? … [W]e have PLC [professional learning community] times once a month. What do you use it for? How do we ensure that you talk about math?

Sierra House was able to pilot a system to examine math instruction and learning transparently within this shared PLC time. Embedding the math collaborative process within a mandatory meeting space ensured that all teachers had monthly conversations about instruction.

This consistency also established trust in the process across the staff at Sierra House, which was critical given the initial culture of teacher autonomy. Everyone knew what to expect for each day of the process. Additionally, teacher leaders from the P3CC team modeled collaborative conversations and examinations of student work, setting an example for their colleagues by openly discussing their instruction even when instruction did not turn out to be as effective as they planned. Discussing how one another's instructional decisions affected student learning moved conversations away from complaints about teaching resources to deeper discussions about instructional practices, supported with student-outcome data from common math tasks.

Instructional leadership both from the district and at the school level was key to developing a system for adult capacity building, and that alignment is critical to the ongoing spread efforts.

LTUSD had a vision for math instruction but had no way to translate that vision to implementation at the school site. The instructional leadership to bridge the gap between the district office and school sites came from the math CSP and the principal at Sierra House. The CSP had created resources to support improved math instruction but had limited avenues to engage with teachers and support implementation of those resources at the school level prior to the principal at Sierra House naming the work as a priority at their site. The improvement of math teaching and learning took root because both leaders carved out the time, space, and processes for teachers to examine their own instruction using existing resources, and because the leaders secured additional time from the district office to share the math collaboration day process with other sites.

Once the time and space were secured for the math collaboration days, the two instructional leaders remained active participants, facilitating the conversations around instruction and providing supporting materials (e.g., essential standards, pacing guides, and guiding documents for each grade-level team) and processes (e.g., learning labs) as needed. What gets measured gets done, and both the principal and math CSP prioritized monitoring and providing feedback on the implementation of the three math instructional practices and examination of student learning evidenced in the common math tasks. The math CSP guided the initial introduction of the essential standards and provided additional coaching and support to teams when necessary. The principal adapted the grade-level team reflection and planning

protocols as teachers' depth of understanding of the process, standards, and instructional strategies increased (e.g., moving from how many students got the problem right to asking how many students used a valid math strategy to solve the problem and which strategies did they use). This collaboration with teachers also provided valuable feedback to the math CSP in refining district resources and deepened everyone's knowledge of what high-quality math instruction looked like across all grades, building their capacity as well.

LTUSD provided resources at two critical junctures: (a) to initiate Sierra House's pilot of an adult capacity-building system and (b) to spread the learning from the pilot to others across the district.

LTUSD empowered a single site to pilot its own system to improve math teaching and learning; LTUSD is now trying to spread that model across the district. The district office is using the success of the pilot elementary school—specifically, the structures and processes created by the principal and math CSP who led the work—to build buy-in with other site leaders and teachers.

Because of LTUSD's decentralized approach to adult capacity building, there were no clear processes and structures to align math instruction around the district's essential standards and pacing guides. The district needed to find a school that was willing to take district resources and pilot them alongside new math strategies. Once the district had partnered with an invested site leader to build a pilot system with evidence of impact, it needed to leverage additional resources strategically to spread the learnings from the pilot. This suggests that a decentralized district office had to provide resources at two critical junctures—initiation and spread—to establish a system for adult capacity building and then take it to scale.

During the initiation of the work, the district provided resources, including time, space, and personnel (the math CSP and P3CC team members) tasked with the responsibility of creating a new process or system. Sierra House then piloted its own system for building adult capacity, monitoring its impact on instruction and student learning and helping to refine the district resources for math instruction. Once a system to build adult capacity centered on evidence-based instructional practices had been established in Sierra House, the district made resources available with support of EDCOE to share that learning with other sites. As a result, the work spread during the 2023–24 school year to two additional elementary schools, the middle school, and high school through two collaborations: one focused on P3CC and one on coherent math instruction between eighth and ninth grade to improve on-track rates (i.e., 8/9 On-Track).

While this approach has supported the creation of a system to build adult capacity at one site and has begun the same work at others, it still relies heavily on principals to realize LTUSD's vision and sustain coherence across sites with rather light support at this point from the district office. Currently, five principals are at a minimum interested in trying to implement learnings from the Sierra House pilot at their own sites. One of the elementary school principals has opted not to participate, which raises the question of how LTUSD, with its decentralized approach, will ultimately align all sites.

Further district resources will be needed to develop a coherent districtwide system for adult capacity building going forward.

Sierra House teachers currently use open-ended tasks aligned with essential standards as their primary method for formatively assessing student learning, which in turn shapes their instructional practices. Going into Year 4, grade-level teams are developing weekly open math tasks beyond the monthly tasks created in Years 2 and 3. Additionally, the Sierra House staff realized a need for common summative data to monitor the impact of math instructional practices being implemented across the essential standards. To this end, several teachers piloted i-Ready in 2023–24, and the whole school is adopting its use in their classrooms for the 2024–25 school year. The school is also piloting the Learning from Children assessment in kindergarten through fifth grade during the 2024–25 school year; this assessment aligns with the counting collection instructional strategy and essential standards. As a result, the protocol during the math collaboration days now includes the examination of these data, supporting the staff of Sierra House with developing their data-use capacity to monitor the efficacy of instructional practices in the same way they developed their shared expectations for teaching and learning. Currently, the district does not have a similar process for collecting and examining common data to make overarching decisions about instruction or inform capacity-building efforts across schools. The district has yet to determine how it will monitor implementation and impact of the selected instructional practices to ensure coherence with processes similar to those developed at Sierra House across all sites.

Spreading this work coherently across the district will require similar alignment between district instructional leadership and leadership at each school site. It is currently unclear if LTUSD has the district resources—there is only one math CSP for all eight sites—to support this work. It is also unclear how the district will collaborate in a similar fashion as in Sierra House to generate the ownership necessary to sustain the work going forward. At present, the spread and scale strategy will rely heavily on the principals at other sites learning from the math CSP, with fewer available support hours from her because a portion of her time is now being spent as a middle school math teacher. The district office has provided additional resources for teachers to learn from external partners (e.g., Ed Partners and EDCOE), but it is unclear if capacity to support the continued spread and scale is being developed in the district beyond the math CSP. To ensure coherence in adult capacity building across the district, most likely someone—or multiple staff—from the district level will need to provide feedback and monitor implementation across the new pilot sites or when changes in school leadership inevitably occur.

Conclusion

This case study of LTUSD and Sierra House Elementary School highlights the critical role of strong instructional leadership and strategic resource allocation in building adult capacity and improving instructional practices. By consistently engaging in collaborative processes within existing structures, the school has fostered a culture of inquiry and reflection that has begun to transform math instruction within the school. This work is now being spread across the district. LTUSD's approach, which started with a focused pilot and strategically expanded, demonstrates that decentralized districts can empower sites to develop systems that improve teaching and learning and subsequently spread that learning to other sites. It remains to be seen if this support is sufficient to develop—much less sustain—a districtwide system for capacity building, but an alignment in expectations and an increase in interest in improving math teaching and learning are underway in LTUSD.

The journey of Sierra House highlights the importance of aligning resources and instructional leadership from both the site and the district level to develop systems to improve teaching and learning that are coherent with the district's vision. Additionally, this case study shows that the use of consistent processes and structures focused on high-quality instruction, such as the math collaboration days, can build the ownership and depth of knowledge necessary to scale best practices. LTUSD doesn't have a districtwide system for adult capacity building yet, but it now has a blueprint to work from that offers valuable insights for other districts seeking to improve instructional practices through collaboration and continuous improvement.

Endnotes

[1] California Department of Education. (2021–2022). *English language arts/literacy and mathematics: Smarter Balanced Summative Assessments: Test results comparison* [Report on data set]. California Assessment of Student Performance and Progress. caaspp-elpac.ets.org/caaspp/CompareReportSB?ps=true&lstTestYear=2022&lstTestType=B&lstGrade=5&lstGroup=1&lstSchoolType=A&lstCds1=09619030000000&lstCds2=00000000000000&lstNav=srch&lstFocus=a

[2] Education Data Partnership. (2024). District summary: Lake Tahoe Unified [Data set]. ed-data.org/district/El-Dorado/Lake-Tahoe-Unified

[3] Marzano Resources. (2024). *The critical concepts.* marzanoresources.com/educational-services/critical-concepts

[4] Franke, M. (2018). *Counting collections overview.* Development and Research in Early Math Education. prek-math-te.stanford.edu/counting/counting-collections-overview

[5] Teacher Education by Design. (2014). *Choral counting.* tedd.org/choral-counting

[6] Carpenter, T. P., Fennema, E., Franke, M. L., Levi, L., & Empson, S. B. (2014). *Children's mathematics: Cognitively guided instruction* (2nd ed.). Heinemann; Franke, M. L., Kazemi, E., & Turrou, A. C. (2018). *Choral counting and counting collections: Transforming the preK–5 math classroom*. Routledge; National Council of Teachers of Mathematics. (2014). *Principles to actions: Ensuring mathematical success for all.* nctm.org/Store/Products/Principles-to-Actions--Ensuring-Mathematical-Success-for-All

[7] Ball, D. L., Sleep, L., Boerst, T. A., & Bass, H. (2009). Combining the development of practice and the practice of development in teacher education. *Elementary School Journal*, *109*(5), 458–474. journals.uchicago.edu/doi/10.1086/596996

[8] Ball, D.L., & Forzani, F. M. (2010). Teaching practice inside teacher education: Toward a practice-focused curriculum. *Journal of Teacher Education*, *61*(1–2), 118–134; Gallagher, H. A. (2016). *Professional development to support instructional improvement: Lessons from research.* SRI Education. www.sri.com/publication/education-learning-pubs/teaching-quality-pubs/professional-development-to-support-instructional-improvement-lessons-from-research; Garet, M. S., Porter, A. C., Desimone, L., Birman, B. F., & Yoon, K. S. (2001). What makes professional development effective? Results from a national sample of teachers. *American Educational Research Journal*, *38*(4), 915–945. doi.org/10.3102/00028312038004915

[9] Calvert, L. (2016). *Moving from compliance to agency: What teachers need to make professional learning work*. Learning Forward and NCTAF. learningforward.org/report/moving-compliance-agency-teachers-need-make-professional-learning-work

[10] Doig, B., & Groves, S. (2011). Japanese Lesson Study: Teacher professional development through communities of inquiry. *Mathematics Teacher Education and Development*, *13*(1), 77–93. files.eric.ed.gov/fulltext/EJ960950.pdf

[11] Cottingham, B. W., Hough, H. J., & Myung, J. (2023, December). *What does it take to accelerate the learning of every child? Early insights from a CCEE school-improvement pilot* [Report]. Policy Analysis for California Education. edpolicyinca.org/publications/what-does-it-take-accelerate-learning-every-child

[12] Desimone, L. M., & Garet, M. S. (2015). Best practices in teacher's professional development in the United States. *Psychology, Society, & Education*, *7*(3), 252–263. ojs.ual.es/ojs/index.php/psye/article/view/515; Gallagher, 2016; Timperley, H., Wilson, A., Barrar, H., & Fung, I. (2007). *Teacher professional learning and development: Best evidence synthesis iteration (BES).* Iterative Best Evidence Synthesis Programme, Ministry of Education, New Zealand. belmontteach.files.wordpress.com/2015/09/teacher-professional-learning-and-development-timperley.pdf

About the Authors

Benjamin W. Cottingham is associate director of strategic partnerships at PACE. His work focuses on the development of education systems and conditions that support the improvement of student outcomes across California.

H. Alix Gallagher is director of strategic partnerships at PACE, where she leads PACE's work around system reform to support improved student outcomes.

Policy Analysis for California Education (PACE)

Improving education policy and practice and advancing equity through evidence

PACE is an independent, non-partisan research center led by faculty directors at Stanford University, the University of Southern California, the University of California Davis, the University of California Los Angeles, and the University of California Berkeley. Founded in 1983, PACE bridges the gap between research, policy, and practice, working with scholars from California's leading universities and with state and local decision makers to achieve improvement in performance and more equitable outcomes at all levels of California's education system, from early childhood to postsecondary education and training. We do this through:

1. bringing evidence to bear on the most critical issues facing our state;
2. making research evidence accessible; and
3. leveraging partnership and collaboration to drive system improvement.

Related Publications

Cottingham, B. W., Hough, H. J., & Myung, J. (2023, December). ***What does it take to accelerate the learning of every child? Early insights from a CCEE school-improvement pilot*** [Report]. Policy Analysis for California Education.

Gallagher, H. A. (2024, August). ***Strategies for successful scaling in districts: Breaking the cycle of the "next new thing"*** [Commentary]. Policy Analysis for California Education; republished with permission of LEARN Network.

Gallagher, H. A., & Cottingham, B. W. (2024, December). ***Building momentum one step at a time: Grass Valley School District's progress towards P–3 coherence in literacy*** [Practice brief].

Gallagher, H. A., & Cottingham, B. W. (2024, December). ***Taking reform to scale: Learning from California Education Partners collaborations*** [Practice brief].

Gallagher, H. A., Cottingham, B. W., & O'Meara, K. (2022, July). ***Generating traction with continuous improvement: Lessons from two learning networks*** [Report]. Policy Analysis for California Education.

PACE
Policy Analysis for California Education

Stanford Graduate School of Education
520 Galvez Mall, Suite 444
Stanford, CA 94305

Inquiry: info@edpolicyinca.org
Media: press@edpolicyinca.org
Office: 650.576.8484

edpolicyinca.org

Follow us on social media: