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any educators are familiar with the concept of "building the plane while flying it" because we often have to learn new curricula and instructional practices while we are implementing them with students.

But what if we could do it another

way? How would instruction and student learning improve if we made the time to really understand and practice a new curriculum before implementing it in classrooms with

In Orange County, California, we are finding out by testing an approach of preimplementation professional

learning for a full year before applying a new curriculum.

Our team at Orange County Department of Education's Teaching, Learning, and Instructional Leadership Collaborative has long supported efforts to improve how districts identify, select, and implement highquality instructional materials. Over

3 CONDITIONS FOR TRANSFORMING LEARNING WITH INSTRUCTIONAL MATERIALS

An instructional vision:

- Creates a clear and common definition of what high-quality teaching and learning looks like in each content area.
- Presents a future state that stakeholders across the school system can get behind and builds momentum for change.
- Ensures coherence across multiple decisions, including the curriculum, types of professional learning, coaching model, and assessment practices.

A robust adoption process:

- · Examines data.
- Sets goals and timelines for the adoption process.

 Establishes what key staff members (e.g., selection committee members, pilot classroom teachers, and school board members) need to learn to identify materials that advance the district's goals and instructional vision.

Professional learning:

- Supports actualization of the vision of quality instruction and the selected curriculum.
- Builds educators' knowledge of and application of the curriculum.
- Provides ongoing, job-embedded support across roles.
- Fosters a culture of collaboration and inquiry.

the past decade, we have advocated for inclusive adoption practices (Guarino et al., 2018) and shared how thoughtful approaches to curriculum selection can transform district behavior and student outcomes (EdReports, 2018).

Now, as districts across California prepare for upcoming curriculum adoptions in math, we are finding that there is a pressing need to get the conditions for a successful implementation in place in advance. One of those conditions is curriculumbased professional learning, an approach to educator learning that is grounded in instructional materials and connected to teachers' daily work with them.

Along with two other conditions
— setting an instructional vision
and preparing for a robust adoption
process — we believe that investing
in curriculum-based professional
learning from the very beginning
— in the phase before curriculum
implementation — will allow districts
to reap benefits for years to come.

SETTING THE CONDITIONS

To understand our curriculum and professional learning focus,

it's important to understand our philosophy and goals. Our team at the Teaching, Learning, and Instructional Leadership Collaborative believes in a future in which all students experience excellent instruction, joy, and meaningful interactions with adults who believe in their potential. We envision that all classrooms will be environments in which students are engaged in rich discourse, have ample opportunities to make sense of the discipline, and understand the purpose and process of increasingly complex disciplinary ideas.

For this to happen, we believe teachers need to have the tools and resources to make instructional decisions based on students' current thinking and understanding.

High-quality instructional materials are a key component but are insufficient on their own. They have to be grounded in a coherent instructional vision, a robust adoption process, and systems of professional learning for educators. (See box above.)

Professional learning is a critical part of capacity building for making the instructional shifts called for in the instructional vision and the high-

quality materials. But the typical professional learning approach for curriculum adoption — one to two days of training from the curriculum company — is insufficient for ensuring educators understand the curriculum structures and how to use them.

Successful districts and schools are continually engaged in a process of inquiring into teaching and learning. We know from research that educators need opportunities to regularly learn alongside each other about teaching the curriculum (Fredston-Hermann & McCormick, 2024). District leaders should plan for ongoing, embedded educator learning by designing the collaborative structures, budgeting for resources, and orienting existing professional learning teams to help educators critically interrogate teaching practice to reflect on teaching and plan their future work with students.

Defining a new system of professional learning means looking closely at how all adults in the system — including teachers, school leaders, coaches, and district leaders — build the knowledge and skills they need to positively impact students. A coherent system is designed so that the learning

will deepen and build on itself over multiple years, and there are multiple learning opportunities that include collaboration time, school site staff learning sessions, and instructional coaching.

LEARNING FROM A LAB SITE

Identifying a lab site or a pilot school is a great way to start experimenting with structures for facilitating deep and collaborative curriculum-based professional learning. We have found that districts have the ability to more quickly innovate, pivot, and apply learning in a smaller context. In these environments, leaders can consider important content and design features and ultimately use that knowledge in scaling up the changes to additional schools.

The first step at the lab site is for district and school leadership to take stock of current structures for collaboration. For example, district leaders should ask:

- What structures exist for teachers and leaders to come together to talk about teaching?
- Who currently facilitates learning in these structures, and what are their goals for supporting educators' collaboration?
- To what extent are interactions focused on teaching, students, the content, and the curriculum?

Based on the answers to these questions, the district may find that it needs to create additional structures for educator learning. To create consistency and coherence, the district may need to hire facilitators (such as content-focused coaches) and plan for their professional learning. The district may also need to consider whether and how accountability structures like teacher evaluations align with the goal of supporting teachers to analyze teaching and, if they don't, how to revise them.

As districts learn from the lab site collaborative structures, they should

be continuously learning and applying these lessons to their implementation strategy. Along the way, they should ask themselves: What can be put into place now to support the adoption and implementation at other schools? What will be necessary in six months? A year from now?

AN EXAMPLE OF COLLABORATIVE CURRICULUM-BASED PROFESSIONAL LEARNING

Our team at the Teaching, Learning, and Instructional Leadership Collaborative is working with Tustin Unified School District to implement curriculum-based professional learning before what is traditionally considered to be an adoption year so that the district's new math curriculum can take hold and drive positive outcomes for students. Our collective work together is rooted in a deep understanding of the current state of teaching and learning in the district, its instructional vision, and the research about what makes educator professional learning powerful.

One elementary school serves as a lab site where everyone is positioned as a learner: students, teachers, coaches, administrators, and teacher educators. The team at the lab school, which is composed of math teacher educators, the principal, an instructional coach, and teachers, designs and engages in curriculum-based professional learning to support the implementation of problem-based materials in mathematics. This learning extends across the year through monthly staff learning sessions, weekly gradelevel collaboration, and in-classroom coaching, all grounded in the use of the curriculum materials.

For example, for each math unit, grade-level teams work together to understand the goals of the unit as well as the pedagogical practices that facilitate student learning. They begin by completing the end-of-unit

assessment so they are knowledgeable about the targets they're working toward and discussing key concepts and skills that students will be expected to know by the end of the unit.

Then they read the math of the unit, along with prior learning they are building on and future learning they are building toward so they can think about students' learning trajectories over time and understand how to differentiate instruction for students with unfinished teaching or those ready for extension.

Next, they look at the language that will be introduced and used within the unit, including both mathematical vocabulary and language functions such as explaining one's thinking and justifying a conjecture. They identify strategies to support the development of these types of language. The next step includes understanding the mathematical progression of the unit by looking carefully at the progression within each subunit (an organizational feature of the instructional materials) and describing the progression of concepts, skills, and language.

As the work continues over the course of the year, instructional leaders from across the district observe professional learning at the lab site so that they can see productive collaboration and engagement and develop a shared vision of high-quality curriculum-based professional learning.

The lab site also helps district leaders understand conditions necessary for successful implementation of the curriculum at scale, including: the level of knowledge an instructional coach needs to support productive collaboration among teachers; the role of an instructional leader in curriculum implementation; leader pedagogies that support high-quality math instruction; and space and structures needed for student learning to occur. This knowledge can then inform district decision-making such as allocation of resources for coach learning or

How coaches learn about curriculum: An example from Tustin, California

At the kickoff of Tustin Unified School District's Instructional Coach Camp, participants sat at tables of six, each holding a card with unique information that would become necessary for the group to solve a math problem. As each person shared the information on their card, the group members thought about how it fit with information they already had and worked together to synthesize and record their ideas. The room buzzed with energy and interaction. Some groups cheered after solving the problem.

Next, teams engaged in a debrief, reflecting and responding to the following questions: How did you engage with each other to solve the problem? What were all of the things you did? What were some benefits of working and learning together? How would this experience have been different if you had to solve the problem on your own? Participants

talked about the belief that everyone is a sense-maker and the importance of listening to make sense. They shared ways they worked together and reflected on their collaboration.

This activity set the stage for how the group would work, both as a community and with teachers they served, over the course of the next year. It was designed to mimic the engagement, interaction, and experience foundational to the learning goals for students to facilitate the development of a shared vision of instruction among the participants that could ultimately be shared across the district.

Coaches appreciated the experience, noting the interdependence of team members as they worked together. Everyone shared ideas, and the ideas were all valued. Several people tried the activity with groups they lead, using it to launch teamwork.

principal learning or structures and processes for grade-level team collaboration.

At the same time the learning team engages at the lab site, administrators, instructional coaches, and teachers on special assignment from across the district engage in ongoing, job embedded parallel learning. They participate monthly in a curriculum leadership academy so they will have a set of tools and pedagogies to lean into as they lead their respective sites.

For example, in one early session, administrators and coaches watched a 10-minute video clip of a 4th-grade team of teachers, principal, and instructional coach engaged in doing a math problem and talking about the upcoming fraction unit. Team members were asked to focus on the collaboration among the educators in the video, including how collaboration supports everyone's learning and how educators in different roles encouraged it.

They discussed these topics after watching, occasionally pausing, rewatching, and unpacking details. This

provided an opportunity for educators across the district to construct a shared vision for collaboration as a space for learning and consider the roles of each stakeholder, including instructional coaches, whose role is new.

Coaches and teachers on special assignment also participate in a weekly observation of grade-level collaboration at the lab site. This observation is carefully planned with a pedagogical tool or move in mind, such as looking at the questions and follow-up prompts the facilitator asks of teachers when the group is reviewing student data.

Another learning opportunity for teachers on special assignment and instructional coaches is instructional coach camp (see box above), where they continue to learn in biweekly sessions, doing math together, understanding the progressions, and developing a core set of instructional practices.

START LAYING THE FOUNDATION

Learning from the lab school has started to spread. Grade-level

collaboration across elementary sites has started to look different. Some teams have started immersing themselves in the coherence of the state math standards as they unpack mathematical ideas and see the progression within and across grades. Other teams have started bringing student work and looking at whether it reflects the gradelevel standards.

Teams are becoming more collaborative and more focused on teacher learning and student learning. We expect this trend to grow after instructional materials are selected and teams are leaning into the materials and implementing them with students.

For many educators, this kind of curriculum-based professional learning is new. Most of us didn't experience this type of teaching and learning when we were students, or even earlier in our careers as educators.

We know that curriculum matters, and high-quality instructional materials are important. But just as important is how those materials are used. Collaborative, curriculum-based

FOCUS CURRICULUM-BASED PROFESSIONAL LEARNING

professional learning can help us ensure the materials are used well by grounding new information and pedagogies in the daily work of teaching.

Districts in multiple states, including California, are slated to choose new curriculum next year. We encourage them not to wait to get the conditions in place that will ensure that they select, support, and see results from this important investment. We have learned over the past decade about the importance of coherent systems and structures and about the time it takes to put them in place.

We encourage all educational systems to start planning and building the necessary conditions — including

professional learning — now to ensure new curriculum investments will lead to the instructional transformations that teachers want and students deserve.

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