

More Than Right Answers: Math Instruction for Multilingual Learners

March 2022

When students have opportunities to do grade-level work, they rise to the challenge. But too many students don't get those chances—often because teachers assume the work is too challenging and offer a simplified version instead.

[TNTP's research has found](#) that these well-intentioned efforts to “meet students where they are” actually cause students to fall even farther behind academically.

It's a challenge that's especially urgent to address for Multilingual Learners (MLLs), one of the fastest-growing student demographics—and one of the least likely to receive consistent access to grade-level work. Inequitable access to strong curricula, inconsistent scaffolds and supports, and lack of explicit language development instruction all perpetuate an [opportunity gap](#) between MLLs and native English speakers that the COVID-19 crisis has only widened.

Closing this gap and [accelerating MLLs' access to grade-level work](#) requires not only giving educators the tools to support language access to rigorous content but helping them develop a belief that all MLLs can engage in challenging, grade-level learning with the right supports.

In 2021, TNTP partnered with [Stanford University's Center for Understanding Language](#) (UL) to do just that by piloting a professional learning experience for middle grade math teachers in three California school systems that serve high percentages of MLLs. Our goals were to provide dynamic, hands-on training in effective language instructional practices that allowed math teachers time to apply what they learned with students—and see firsthand what MLL students could accomplish as a result. It's an approach modeled on [TNTP's successful Good to Great teacher development program](#), tailored to incorporate UL's expertise with MLL instruction. We also worked with system and school leaders to assess the efficacy of their MLL programs and identify key priorities for access and equity for all learners.

Below, we describe this work in more detail and the results we saw from real teachers and students. [We also share key resources and recommendations educators and system leaders can use](#) to better support MLLs in their own classrooms.

To learn more about any of the strategies in this toolkit or find out how to partner with TNTP to implement them in your school system, [contact us using this form](#).

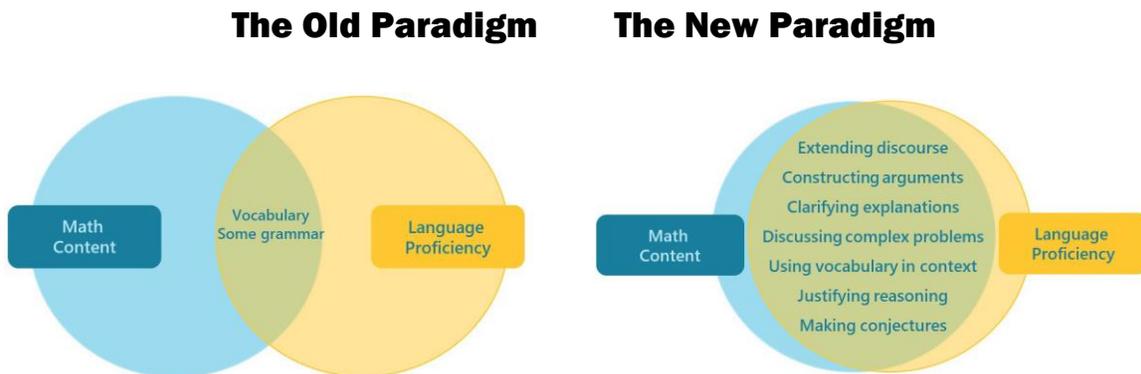
Where We Worked

Through the generosity of the Bill & Melinda Gates Foundation, TNTP partnered with three mid-sized school systems across California to apply the Good to Great model to math instruction for MLLs. While all professional development took place virtually, we chose three districts that vary in geography and other important factors, but all serve a student body composed of at least 25 percent MLLs and at least 50 percent students receiving free or reduced lunch.



Language at the Center

Throughout the trainings, TNTP’s overall focus was on supporting multilingual learners to develop math understanding and language proficiency through scaffolded grade-level content and discourse. We showed teachers how to provide language supports for students without reducing the cognitive demand of the task.



The old paradigm for learning had a simple view of the relationship between content and language: In math class, some vocabulary was called out, but that was the extent of the language strategy. Instead, MLL Good to Great includes language as a focus before, during, and after each lesson.¹

- **Before each lesson**, teachers analyzed the linguistic demands of the task and text, and designed scaffolds that empowered students to engage with the language.
- **During the lesson**, teachers constantly monitored academic understanding and language use, and they used carefully crafted questions that assessed student learning and advanced student thinking.
- **After the lesson**, teachers reflected on student engagement, examined what language was used, and how language could be scaffolded going forward to support student learning more effectively.

IM 6-8 Math problem with language supports

A school carnival ticket booth posts the following sign:

- Which amount of tickets offers the best deal? Explain.
- How would you suggest the students running the ticket booth modify the list prices?

TICKET BOOTH

1 Ticket for \$.50
 12 Tickets for \$5.00
 25 Tickets for \$10.00
 50 Tickets for \$25.00
 120 Tickets for \$50.00

HAVE FUN!



School carnival



She is running the ticket booth. That means she is working in the ticket booth.



The student is modifying or changing what they wrote.



The best deal costs less money. One soccer ball is \$5 and one is \$10. The \$5 soccer ball is the best deal because it costs less money.

For example, in the math problem shown here, teachers analyzed the language demands and identified terms and phrases that would need support.² Terms like “modify” and “school carnival” might be new to MLLs, so teachers found pictures that helped to illustrate meaning. The teachers used the terms like “best deal” in context and provided visuals to support the definition. For a phrase like “running the ticket booth,” teachers recognized that “running” has multiple meanings, and MLLs would need visual and contextual support to understand that “running the ticket booth” means someone is working in the ticket booth.

These practices underscored that it was equally important to reflect on students’ access to language as with the math content. This level of intentionality resulted in stronger planning for language support for MLLs throughout the intensive.

Applying the Four Principles of TNTP’s Good to Great Training

Our training was based on TNTP’s successful Good to Great professional development experience for teachers, which is designed around four principles:

Principle	What We Did	Toolkit Strategies	Results
Focus	People can only work on so many things at one time. We focused on a narrow set of specific skills and strategies to maximize students’ language use and comprehension, while also maintaining the	Warm-Up Math Routines (Ex: Number Talks / Problem Strings) Mathematical Language Routines (Ex: Three Reads and Stronger & Clearer Each Time) Task-Embedded Receptive Language Supports Productive Language Supports complexity of the math content.	Teachers indicated that lesson preparation using strong instructional materials and differentiated language supports was very helpful in building their knowledge and skill to provide equitable opportunities for all students to engage in mathematical sense-making and problem-solving.
Accountability	Grade-level groups of teachers met daily to examine where they were in “The Learning Pit,” a metaphor for the struggles and successes of learning a new skill. To hold each other accountable, grade-level teachers collaboratively analyzed each day’s instruction, including reflecting on equity. Working together, teachers developed an authentic professional learning community and acquired new shared habits.	The Learning Pit Student Work Analysis Protocol Equity Reflections Planning for MLLs	From pre- to end-of- training, teachers’ expectations increased as they began implementing language supports and witnessed how fully multilingual students were able to engage in academic conversations about math.
Engineering Success	We know that teachers will change their practice when they see students achieve, so we carefully designed the language content and training experiences to give teachers the best chance of having success, which included immediately trying out new learning with students.	Lesson Components and Preparation, including planning for language needs and scaffolds (Discussed in the Strong Instruction for MLLs Tool and Language-Focused Teaching Template)	MLL Good to Great empowers teachers to try out new instructional methods in an emotionally safe environment. Teachers analyzed their own math identities and experiences, unpacked language demands in math, and used strategies that support both developing language and math understanding.

<p>Feedback</p>	<p>Teachers want to know what they are doing right, and what they can improve. TNTP coaches sent teachers daily feedback that emphasized what went well first—and that list was always longer. Constructive feedback was small, one or two suggestions, and easily implemented the next day. If teachers implemented one small change at a time, it felt less overwhelming, and change was visible more quickly.</p>	<p>Observation Forms Language-Focused Feedback Time for teacher Processing and Response</p>	<p>The majority of teachers who participated in MLL Good to Great shared that individual written and verbal feedback were the most helpful in building student knowledge and skill while supporting multilingual learners.</p>
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We incorporated these key principles into the training through concentrated “mini-inquiry” cycles. These cycles consisted of preparing (learning new strategies for weaving together language and content learning); teaching and gathering evidence; and reflecting on ways to make changes in order to accelerate student learning, communication, and agency. The interaction among educators was a powerful piece of this process, as they learned from, supported, and challenged each other in using the instructional tools.

Every aspect of these meetings was designed to support teacher collaboration and conversations. For example, when preparing for a lesson, the TNTP facilitator would meet with a group of grade-level teachers and use the [Language- Focused Teaching Template](#) to examine a math problem. As a group, the teachers would discuss the language used in the problem and identify the specific strategies from the toolkit they might employ to scaffold language supports.

After teaching the lesson, the group of teachers would reassemble and use the [Student Work Analysis Protocol](#) to reflect on what the students produced that day. These conversations would delve into the nitty gritty of the lesson: which students did well, who might need more support and what that could look like, and what tools and strategies might help. Over time, these discussions became entirely teacher-led, giving them ownership over both the collaboration and the results.

Changing Beliefs, Changing Practice

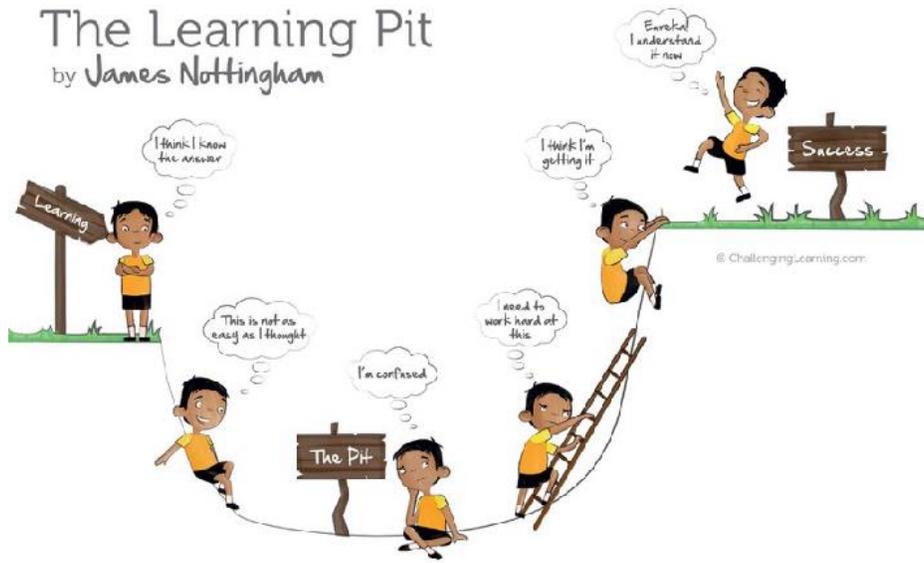
Teaching more challenging material requires instructional shifts that can feel daunting, even for experienced teachers. It also takes an unwavering belief that all students are capable of grade-level work.

Our approach in this work was built on the idea that teachers change their underlying beliefs about how to teach something only after they see success with students. Focusing on instruction without also reflecting on mindsets is like making a sandwich without bread—the ingredients are there, but without anything to hold them together. During these trainings, TNTP helped teachers examine mindsets around both their own sense of efficacy and their preconceptions of students’ abilities.

As part of daily planning, teachers consistently reflected on their position within the “learning pit,” a metaphor for the struggles and successes of learning a new skill—in this case, implementing language supports while teaching math.³ We coached teachers to be willing to try new things in the classroom, and to recognize that trying, failing, and trying again is part of the process of climbing out of the learning pit. As teachers eventually saw the positive impacts of language support on students’ learning, they also felt more confident in their instruction.

The Learning Pit

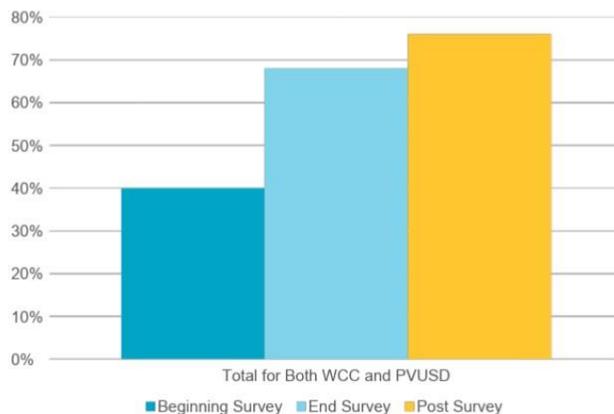
by James Nottingham



Following the training and intensive, participating teachers across all sites overwhelmingly indicated they will use MLL Good to Great strategies in their teaching in the future. On surveys, 90 percent of teachers agreed or strongly agreed with the statement, “My teaching has improved as a result of TNTP’s Good to Great training,” while 83 percent of participating teachers showed growth in the observation scores from pre/during training to end/post training.

After we completed the intensive with Aspire Public Schools, so many teachers commented that they felt more confident in supporting their MLLs that we decided to gather more formal data during our next two intensives. Teachers from the Pajaro Valley Unified School District (PVUSD) Fall Cohort and West Contra Costa Unified School District (WCC) responded to the statement “I feel confident in supporting English learners in my classroom” on multiple surveys. Nearly 60 percent of those teachers saw improvements in their confidence over time.

Percent of Teachers who Agree/Strongly Agree with the Statement “I feel confident in supporting English learners in my classroom.”



However, the most notable results were the significant shifts in teacher expectations, particularly for MLL students. When asked to reflect before and after the training, educators consistently revealed an increased respect for their students’ potential and capacity for learning. “With language support, so many more students are able to understand the problems and participate in class discussion,” one 4th grade PVUSD teacher wrote. “Encouraging students to explain or repeat what they understood from their peers was invaluable,” shared another PVUSD educator.

“I never told them that this was really hard...I did not just assume they can’t do it. If we keep that expectation high, even if it takes a long time, they CAN do it.”

– 6th Grade Math Teacher, West Contra Costa Unified School District

TNTP also surveyed more than 1,100 students of participating teachers. At the end of the intensive, 78 percent of students indicated their teacher provided pictures, charts, and other materials that helped if they didn’t understand most or all of the time, and 75 percent of MLL students indicated that their teacher gave them help to explain their thinking in math, such a word bank or sentence starters.

Using TNTP’s Approach in Your School or System

The chart below provides links to key resources we used in our MLL-focused sorted into three categories: Protocols & Templates, Instructional Strategies, and Videos. We encourage you to explore and make use of these materials in your own schools and classrooms.

Click any resource to access it directly	Protocol Template	Instructional Strategy	Video
Teacher Mindset Reflection Tool	•		
Math Language Routines (Stanford University)	•	•	
Strong Instruction for MLLs Tool		•	
Language-Focused Teaching Template Completed Language-Focused Teaching Template	•		
Warm Up Math Routines		•	
Three Reads Strategy		•	•
Three Reads Video (Math Language Routine)			

Stronger and Clearer Each Time Strategy Stronger and Clearer Each Time Video (Math Language Routine)		•	•
Providing Language-Focused Feedback	•		
Student Work Analysis Tool	•		
Math Curricula Example MLL Supports		•	

Implementation Advice

Interested in making this type of learning and change happen in your system? In addition to the resources above, here are some specific things you can focus on in your role.

If you are a district or network leader:

- *Materials Matter:* Identify and adopt [high-quality instructional materials](#) aligned with the Common Core State Standards.
- *Equity Through Pacing:* Develop and disseminate system-level pacing guidance, or scope and sequence documents, to ensure all classrooms across school sites cover the same grade-level aligned content.
- *Align Professional Development:* Ensure adequate days per year for true professional learning communities (PLC) that are grounded in unit/lesson internalization, rehearsal, and examination of student work.
- *Prioritize Language:* Provide common protocols, such as a language-focused teaching preparation template and language-focused student work analysis protocol to ensure educators have a consistent focus on language.
- *Make Data Accessible:* Establish structures for tracking and regularly communicating students' language data in conjunction with other performance data.

If you are a school leader:

- *Expect and Support:* Hold teachers accountable for teaching the system-level scope and sequence and implementing what was learned in professional development. Ensure that school leaders and coaches regularly observe teachers (both formally and informally).
- *Embed Professional Development:* Develop a master schedule that allows for grade-level collaboration and regular 1-1 coaching through observations or PLC support. Provide opportunities for teachers to internalize research-based best practices to ensure content is accessible for all. Be present in teacher-led PLCs to center student learning.
- *Schedule to Reflect Priorities:* Develop a master schedule that provides math blocks with adequate time, including time for language supports.
- *Data and Practice Transparency:* Give teachers regular access to student data, including language progress. Build a culture where teachers are comfortable with reflection activities like video analysis and lesson plan review.

If you are an instructional coach:

- *Look for Grade-Aligned Content:* Focus observations on the [content being taught](#), alongside other classroom observation indicators.
- *Prioritize Language in Planning:* Co-planning should emphasize both [what is being taught](#) and *how* strategies are used to promote language accessibility. Coaching should focus on co-planning, lesson internalization, lesson rehearsal, and student-work analysis. Build in TNTP's Equity Reflections for teachers to examine the impact of their instruction.

- *Follow Up and Follow Through:* Hold teachers accountable for implementing feedback through weekly or bi-weekly observations. Deliver feedback that addresses equity and accessibility to emphasize inclusive practices for all students.

If you are a teacher:

- *Consistency Ensures Equity:* Be (flexibly) faithful to the school/system-level scope and sequence to create equitable experiences for students across all classrooms.
- *Lesson Planning Looks Different:* Engage in thorough unit and lesson internalization, including unpacking the task, identifying the language demands, anticipating misunderstandings, and solving the task multiple ways. Utilize your curriculum materials and focus your time scripting, pre-planning questions, and embedding supports.
- *Constant Learning:* Be open to change, trying new things, and being in the Learning Pit. Be willing to implement feedback within a defined window set with your coach. Use the [Student Work Analysis Tool](#), including our Equity Pauses, to reflect on the impact of your instruction on all students.

¹ Illustration adapted from Hakuta, Kenji. "Growing Success for ELLs." Stanford's Understanding Language, 2014. Carnival photo from [user sinyasuzuki on Flickr](#), licensed under [Creative Commons BY](#). Pencil photo from [user mujalifah on Flickr](#), licensed under [Creative Commons BY-NC](#). Ticket booth photo from [user sis on Flickr](#), licensed under [Creative Commons BY](#). Soccer ball photo from [user pingnews on Flickr](#), licensed under [Creative Commons BY-SA](#). \$5 bill photo from [Wikimedia Commons](#), licensed under [Creative Commons BY-SA](#). \$10 bill photo from [Unknown Author](#), licensed under [Creative Commons BY-NC-ND](#).

² Problem adapted from IM 6-8 Math.

³ Nottingham, 2007, 2010, 2017. Graphic [used with permission](#).

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