



ILLUSTRATIVE CASE STUDY

This is a sample case study built from patterns we see across districts. Names and numbers are illustrative, not any one district's real data.

Riverbend Unified School District

Mathematics Opportunity Gap Analysis

Where does the math pathway bend? A new way to read the data you already have — and catch the warning signs a year earlier.

THE IDEA

A student's likely reasoning needs can be inferred from multiple sources of data—and then confirmed through targeted tasks and interviews. That reasoning starts forming in kindergarten: it either gets built correctly the first time, or it has to be rebuilt later, at far greater cost to the student and the system.

The goal of this work is prevention, not just recovery. No student should leave elementary school without being on track for algebra — and where a gap has already formed, this analysis is built to catch it early and close it deliberately, instead of letting it surface for the first time in middle and high school.

What Is an Opportunity Gap?

There’s already a name for this in the education field: an Opportunity Gap. It’s a well-established term, and it means something specific.

DEFINITION

An opportunity gap is the way conditions outside a student’s control — access to strong instruction, language support, family and economic circumstances — shape how far that student gets, rather than any gap in the student’s own effort or ability.

You’ve likely heard this called an “achievement gap” instead. That’s the older, more common term — and increasingly, districts and researchers are moving away from it on purpose. “Achievement” quietly implies a student simply didn’t try hard enough. “Opportunity” names what’s actually driving the outcome: whether a student had real access to the conditions they needed to succeed.

A test score only shows where a student ended up. It doesn’t show whether they had a clear goal, a teacher with the right tools, enough time, or a sense that their voice mattered along the way. An Opportunity Gap Analysis looks at all of that together — instead of settling for a single number and a deficit label.

What an Opportunity Gap Analysis Delivers

This is not another test, and not just a slide deck of scores. A Core Collaborative Opportunity Gap Analysis turns data a district already collects into four concrete things a leadership team can use immediately:

What you get	Why it matters
A precise map of where the pathway bends	Instead of “many students are behind,” you learn the exact grade where a math idea first becomes shaky — so effort goes to the real starting point, not a guess.
One early-warning system, built from data you already have	Belonging and participation data, read alongside academic evidence, may reveal an earlier warning signal — giving leaders time to act instead of react.
A plain-language, two-year action plan	Six leadership moves, a daily classroom routine, and a decision-by-decision assessment plan that principals, coaches, and teachers can actually pick up and run with.
An asset-based story your staff can stand behind	Findings are framed around what students and teachers are already doing well, and what would unlock more of it — not a scorecard of blame.

WHY THIS IS WORTH DOING NOW

Districts already have the data. What’s usually missing is a disciplined way to read it together — academic results, language data, and student voice — so that a struggling student’s story becomes visible months before a report card or a state test could ever show it.

THE METHOD

Why We Read Everything Through One Progression

A single grade-level score can tell you a student is behind. It can't tell you which specific math idea is the reason why. So instead of stopping at a grade-level label, this analysis maps every student against the same five-stage progression that sits underneath every state math standard, from kindergarten counting to eighth-grade algebra — and gives each stage a clear, plain-language fluency goal.

Stage	In plain language	The fluency goal
Foundational	Seeing and comparing quantities	Can compare and combine small amounts without recounting from one.
Additive	Joining, separating, comparing amounts	Can find a missing number in a joining or comparing story, not just add what's given.
Multiplicative	Equal groups, arrays, scaling	Can explain multiplication as groups of a size, not just recite a memorized fact.
Rational & proportional	Fractions, ratios, rates	Can compare two ratios and explain which is larger and why.
Algebraic	Variables, equations, functions	Can represent the same relationship as a table, a graph, and an equation, and show they match.

Every finding in this case study, and every recommendation, points back to exactly one of these five stages. That's what lets a teacher move from "this student is behind" to "this student needs the multiplicative stage strengthened" — a difference that changes what happens in the classroom the very next day.

Why algebra is the stage that decides so much

Federal longitudinal data show that roughly 1 in 7 ninth-graders fail Algebra I outright, and among some student groups and in some districts the rate climbs well above 1 in 5 — with local district reports citing failure rates above 40%.

Source: U.S. Dept. of Education, National Center for Education Statistics, High School Longitudinal Study of 2009 (HSL:09).

Failing Algebra I is also one of the strongest known predictors of dropping out of high school: peer-reviewed research tracking student cohorts has found that students who fail the course are several times more likely to leave school before graduating than students who pass it. The pattern compounds from there — students who pass Algebra I graduate on time at dramatically higher rates than students who never do.

Source: Orihuela, Y.R., Algebra I and Other Predictors of High School Dropout, Florida International University.

THE REAL STAKES

Algebra isn't one hard class among many — it's the stage where every earlier gap in the progression becomes visible all at once. A district that can find and close a gap at the additive or multiplicative stage, years before algebra, is intervening at the actual source of the national algebra crisis, not just its symptom.

What K–5 data can and can't tell you

K–5 diagnostic data is a genuine early-warning signal — but it's worth being precise about what it warns about. It doesn't predict algebra success on its own. What it shows is whether a student enters Grades 6 through 8 — the highest-stakes stretch of the whole progression, where multiplicative reasoning, fractions, and early algebraic thinking still have to be built — on solid footing or already behind. A clean K–5 record lowers the risk considerably; it doesn't guarantee a student stays on track through middle school. It's an early link in the chain, not the whole chain.

That's why the strongest early-warning systems don't rely on diagnostic math data alone. They pair it with two signals that don't always move together: attendance and course grades. A student can score fine on a diagnostic check while missing enough school to quietly fall behind — or look fine in their course grades while a diagnostic reveals a specific reasoning gap building underneath. Reading diagnostic data, attendance, and grades side by side, alongside the belonging data covered next, is what turns “keep an eye on this student” into a specific, actionable flag.

Why this is a citizenship issue, not just a school issue

This kind of reasoning doesn't stop mattering at graduation. Comparing a ratio, reading a rate, or judging whether a relationship in the news is proportional or misleading are everyday adult tasks — reading a loan's interest rate, understanding a poll, filling out a tax form, judging a risk. The most recent national adult skills survey found that 34% of U.S. adults — tens of millions of people — scored at the lowest numeracy proficiency levels, indicating they struggle with the reasoning needed to reliably handle everyday numerical decisions.

Source: U.S. Dept. of Education, National Center for Education Statistics, Program for the International Assessment of Adult Competencies (PIAAC), 2023 results.

That's the case for building this progression deliberately, grade by grade, instead of hoping it accumulates on its own: the reasoning a district builds in Grade 3 is the same reasoning a graduate will need at 35, reading a mortgage offer or a ballot measure. This isn't just a test-score problem. It's a readiness-for-life problem, and it's solvable years before a student ever sits down for an algebra final.

Built From Four Data Sources Most Reports Never Combine

Most districts get a report on their state test scores. Some get a separate report on diagnostic benchmarks. A few get a climate survey summary, filed away on its own. Almost nobody puts all four of these side by side and asks what they say when read together:

Data source	What it shows on its own
State math test (SBAC)	How students perform against the state’s official grade-level standard.
Diagnostic math benchmark (i-Ready)	How far a student is from grade level right now, and in which specific math domains.
English-language assessment (ELPAC)	How a student’s English is developing, and whether language may be limiting access to grade-level math.
Healthy Kids Survey	How connected, motivated, and heard a student feels at school — not about math specifically, but about school as a whole.

Each of these uses a different scale, asks a different question, and covers a different group of students. None of them can carry the whole story alone — and none of them should be averaged together or treated as interchangeable. But read side by side, with real discipline about what each one can and can’t prove, they triangulate into a single, specific picture: exactly where a student’s math thinking first became shaky, and whether the adults around them can already see it coming in how that student shows up, participates, and feels about school.

THE HONEST PART

This is a genuinely heavy analytical lift — reconciling four data sources, different populations, and different scales into one coherent, evidence-checked story. Most districts don’t have the bandwidth to do it themselves, and to be direct: very few outside consultants are actually doing this kind of cross-metric triangulation today. That gap is exactly what this analysis is built to close.

Here's What That Looks Like in Practice

This sample walks through the method applied to a composite, anonymized district we're calling Riverbend Unified — for finding exactly where a math pathway starts to wobble, and for reading student-voice data as an early warning system rather than an afterthought.

Why it's different

- It examines belonging and participation data as potential early-warning signals — signals that can show up before test scores change, not just alongside them.
- It replaces deficit questions ('why can't this student do the work?') with opportunity questions ('which earlier idea needs rebuilding, and how?').
- It diagnoses precisely — stopping the moment it finds the first shaky idea, instead of testing a struggling student on everything they can't yet do.

Two Things at Once

Riverbend already knows that many students aren’t yet doing grade-level math. That’s not new news. What’s missing is a way to see exactly where a student’s math thinking first became shaky — and whether the daily work is actually rebuilding it.

What we found	Why it matters
The gap starts early	By the start of Grade 2, most students are already a full grade or more behind in math.
It grows if untreated	By Grade 8, about 4 in 5 students are two or more grade levels behind.
Grade 5 is a turning point	Only about 1 in 10 tested Grade 5 students met the state math standard — this is the year multiplication, fractions, and early algebra ideas all come together.
Students still care	Students say they’re trying hard in school (70%+) even in high school — low general academic motivation does not explain the pattern.
Adults are working hard, too	Staff show real care and effort — they need sharper tools, not more blame.

THE KEY FINDING

Riverbend should do two things at the same time: stop new gaps from forming with strong new curriculum, and deliberately rebuild the math thinking of students who already fell behind. Neither alone is enough.

FINDING 1

The Gap Begins Early — and Compounds

Grade distance is a screening signal, not a life sentence. It tells you where to look — not what's wrong with a child.

Grade	Students	On grade level	One year behind	Two+ years behind
K	90	22%	78%	—
1	90	3%	74%	23%
2	92	3%	41%	56%
3	90	5%	38%	57%
4	96	7%	28%	65%
5	120	7%	32%	61%
6	112	12%	21%	67%
7	114	6%	27%	67%
8	98	5%	15%	80%

KEY FINDING

Grade 1 is the warning point. Grade 2 is where the gap becomes entrenched. Middle school did not create this pattern—it inherited it.

It is also important to recognize that i-Ready data alone may not be the best way to identify needs in kindergarten. The Core Collaborative's interview protocol provides richer evidence of students' mathematical reasoning and will more accurately inform instructional next steps.

FINDING 2

What Students Are Telling the System

Before looking at the numbers below, here's what each question actually asks. This survey never mentions math directly — it asks about school as a whole.

Term	What it actually asks students
Academic motivation	Am I trying hard to do well in school overall? (Not specific to any subject.)
Meaningful participation	Do I have a real say in decisions — activities, rules, how things run? This is the clearest measure of voice a district has.
Caring adult relationships	Does some adult at school care about me personally? (Any adult — not necessarily a math teacher.)
High expectations from adults	Does an adult at school believe I can succeed?
School connectedness	Do I feel like I belong here and get treated fairly, overall?

Now here's what students actually said, by grade:

Indicator	Gr. 5	Gr. 6	Gr. 7	Gr. 8	Gr. 9	Gr. 11
Academic motivation	75%	68%	69%	71%	72%	74%
Caring adult relationships	70%	67%	53%	57%	54%	47%
High expectations from adults	80%	74%	72%	71%	68%	60%
Meaningful participation	31%	36%	28%	35%	22%	18%
School connectedness	63%	55%	53%	63%	52%	48%

Belonging May Provide an Earlier Warning Signal

Most districts read this table as background noise next to the ‘real’ math data. We read it as an instrument panel.

Researcher John A. Powell (Othering & Belonging Institute, UC Berkeley) defines belonging structurally: not just feeling liked, but having real voice and the power to help shape your school. By that definition, Meaningful Participation is the sharpest belonging measure a district has — and belonging research suggests it can move before academic outcomes do, not only after.

Notice something odd in the table above: Grade 8 — the exact grade where the math gap is worst — is not where participation is lowest. Participation actually rises slightly at Grade 8, then falls off a cliff by Grade 9. That mismatch is worth watching closely.

A caution on the data: the Grade 8-to-9 pattern is important, but cross-sectional survey data cannot prove that belonging changed first or caused the later outcome. This is a hypothesis worth testing with the district's own data — not a proven causal chain.

THE MOVE MOST DISTRICTS MISS

Put a short, low-burden belonging check at the Grade 8-to-9 transition. Don't wait for next year's full survey — or next year's test scores — to confirm what a two-minute pulse-check could tell you now.

FINDING 3

Language Shapes Access — It Doesn’t Explain Everything

English learners are more likely to be significantly behind in math. But non-English learners are behind too — so language support alone won’t close this gap. Both language and math thinking need attention, together.

Group	Two or more years behind in math
English learners	71%
Non-English learners	58%

The fix is to teach language through mathematics, not around it. This means explicitly developing concepts, subconcepts, and academic vocabulary through objects and visuals first; structured opportunities to talk through ideas aloud; precise but accessible language; and repeated chances to compare, explain, receive feedback, and revise. Multilingual learners bring a powerful asset: they are accustomed to understanding and expressing ideas in more than one way. This requires integrated, sheltered language instruction throughout the day, alongside designated English language development at each student’s instructional language level.

FINDING 4

High School Shows Why the Early Years Matter

Signal	Result	What it tells us
Grade 11 state math	95 students · 15% met standard · 71% at the lowest level	Most students reach the end of the K–12 path without solid access to grade-level math.
Algebra 1 (national test)	25 students · 25th percentile (median)	Performance is low across several core algebra ideas.
Algebra 2 (national test)	60 students · 16th percentile (median)	Many results are low, especially in functions and statistics.

A student can still graduate while having limited access to advanced math, college placement, or technical careers. Graduation and math readiness answer two different questions — a district needs to track both.

THE INNOVATION

Asking Better Questions

The single biggest shift in this approach is not a new test. It’s a new question.

A deficit question asks...	An opportunity question asks instead...
Why can’t this student do Grade 8 equations?	Which earlier idea became shaky, and what will rebuild it?
Why are students unmotivated?	What do students say about voice, belonging, and whether their effort shows up as progress?
Why didn’t the teacher fix this?	What tools, time, and diagnostic information did the teacher actually have?
Why do we need another test?	What decision is impossible right now, and what’s the smallest piece of evidence that would make it possible?

WHY THIS MATTERS FOR STAFF, TOO

This reframe isn’t just kinder — it’s more accurate. It assumes competence in both students and teachers, and it points straight at the next helpful action instead of a judgment.

THE RESPONSE

Seven Moves, In Plain Language

Move	In plain words
1. One goal per grade	Pick one big algebraic thinking math idea for every grade, K–8, and build the year around it.
2. Protect the important lessons	Give teachers permission to slow down on the units that matter most.
3. A daily 15-minute routine	A short, consistent practice — outside the main lesson — that strengthens one idea at a time.
4. Use each test once	Every test should answer one clear question. If it doesn't, cut it.
5. Find the real starting point	Use quick, simple check-ins to find exactly which idea is shaky — then stop looking.
6. Build student ownership	Students should know the goal, see their own evidence, revise their work, and explain their own growth.
7. Add a Tier 3 triage block	A dedicated, intensive block for the students furthest behind — built to find the exact break in their reasoning and close it fast.

Why the system needs a Tier 3 block, not just good Tier 1 teaching

The first six moves are about prevention: strong daily instruction in every classroom, beginning in kindergarten. That is the work of Tier 1, and when it is implemented well, it should prevent most new gaps from forming. But strong Tier 1 instruction alone cannot repair years of unfinished learning that have accumulated for a fifth- or eighth-grade student. Those students need something more deliberate than “more of the same instruction, delivered more slowly.”

A Tier 3 block provides that deliberate response: protected instructional time, small groups, and one clear purpose—triage. The goal is to identify the precise point in the learning progression where a student's reasoning first broke down, address that specific breakdown through intensive and well-matched instruction, monitor progress every two to four weeks, and keep the door open to grade-level learning throughout the intervention. Students should return to less-intensive support as soon as the evidence shows they are ready.

Without a well-designed Tier 3 block, the students who need the most precise support often receive the least precise response: more worksheets and repeated procedures rather than a diagnosis of the underlying learning need.

The Core Collaborative's Human-Centered MTSS™ Review brings this level of precision to the system. We examine student-level screening and diagnostic evidence—not only overall scores—to determine which students need Tier 2 or Tier 3 support and where each student should enter the learning progression. We then help the school establish focused intervention groups, define reasoning and fluency goals, select or design the right instructional response, and create a two- to four-week progress-monitoring cycle.

The result is not simply a list of students who are “below grade level.” It is an actionable map showing what each student is ready to learn next, the intensity of support required, and how the school will know whether the intervention is working.

THE BOTTOM LINE

Prevention starts in kindergarten, and it has to hold every year after that — no student should leave elementary school without being on track for algebra. For the students who already have a gap, a Tier 3 triage block is how a district makes good on that promise instead of just repeating it.

What a Case Study Like This Can Do for Your District

This sample shows the kind of clarity a full Core Collaborative case study brings: a precise read on where a math pathway bends, an early-warning system built from data you already collect, and a plain-language plan your whole staff can act on — teachers, coaches, and the board alike.

READY TO SEE THIS WITH YOUR OWN DATA?

The Core Collaborative can build this same analysis — grade-by-grade math trends, a belonging-based early-warning system, and a two-year action roadmap — using your district's own assessment and survey data.



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