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The Missing Piece in Math Reform: Identifying and Supporting Students with Dyscalculia

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Dyscalculia is a specific learning disability that makes it very challenging to understand numbers and learn math, much as dyslexia makes reading difficult. Though it affects roughly the same share of students as reading disability,[1] students with dyscalculia have been far less well-served by schools.[2] However, the recent increase in new state math policies signals a potential opportunity for states and districts to change that. The evidence needed to identify students with dyscalculia early and teach them effectively already exists, and the policy choices that would put this evidence to use are now within reach for states and districts willing to make them. What stands in the way is not a lack of knowledge, but the absence of systems designed with this specific learner variability in mind.

To help leaders seize this opportunity, we organized our brief around what dyscalculia is, how it differs from more general math difficulty, why schools miss it, and what early identification, intervention, and policy each requires.

1 Hussain and Soares, “Dyscalculia,” 251-52; American Psychiatric Association, DSM-5, 51-52. On comparability, see Barbaresi et al., “Math Learning Disorder,” 281-289, reporting cumulative incidence by age 19 of 5.9% to 13.8% for math learning disorder against 5.3% to 11.8% for reading disorder in the same US birth cohort, depending on the identification formula applied.
2 Hussain and Soares, “Dyscalculia,” 252.

Why Should Education Leaders Pay Attention to Dyscalculia Now?

Dyscalculia affects an estimated 3-8% of school-age children, a range that reflects differences in how the condition is defined and measured rather than doubt about its prevalence.[3] By any of these estimates, it is one of the most common learning disabilities. Even though its occurrence rate is comparable to that of dyslexia, most school systems have no coherent way to identify students with dyscalculia, no specialist roles built around their needs, and no intervention infrastructure designed for a math learning disability.[4] Dyslexia has accumulated decades of legislative mandates, screening requirements, specialist positions, and teacher preparation protocols. A search of the published research literature found more than 40 times as many papers on dyslexia's epidemiology as on dyscalculia's, despite comparable prevalence.[5] For students with dyscalculia, that difference has tangible consequences that play out in classrooms every day.

Recent state actions signal an opportunity for a more targeted response. Since 2022, many states have been building screening systems for math learning disabilities, intervention requirements, and teacher-preparation capacity.[6] But most of these reforms still address math difficulty in general terms, rather than dyscalculia specifically. That distinction matters, as a general numeracy agenda is unlikely to reach students whose difficulties are severe, persistent, and neurologically rooted unless screening, evaluation, and intervention systems are designed to find them. However, this should not be misread as an "all or nothing" recommendation, as initial support can be an important first step.

The cost of missing this window is not abstract. When dyscalculia goes unidentified, repeated failure can generate math anxiety, erode self-confidence, and progressively narrow the academic paths that students believe are available to them. Math anxiety is common in its own right, affecting an estimated 17% of people in the United States, and for a student with unidentified dyscalculia, it compounds an issue that is already present.[7] The consequences of low numeracy reach well into adulthood. A UK-based study, for instance, found that adults with low numeracy were more than twice as likely to be unemployed as their more numerate peers, were at greater risk of depression, and earned lower wages with reduced access to job training and promotion. Low numeracy carried a steeper penalty for adult economic well-being than low literacy.[8] Each year of missed identification makes these challenges harder to address.

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3 Hussain and Soares, "Dyscalculia," 252.

4 Haberstroh and Schulte-Körne, "The Diagnosis and Treatment of Dyscalculia," 107; Rapin, "Dyscalculia and the Calculating Brain," 12.

5 Rapin, "Dyscalculia and the Calculating Brain," 12.

6 Kurz and Campbell, "Navigating the Math Wars," 25-30.

7 Hussain and Soares, "Dyscalculia," 254.

8 Parsons and Bynner, *Does Numeracy Matter More?*, 5-6.

Education leaders are not indifferent to students who struggle in math. Rather, the problem is structural, as most systems are not designed to distinguish between a student who needs stronger instruction, a student who needs more time, and a student whose difficulty is neurological in origin and will not resolve without targeted support. Making those distinctions requires deliberate system design, including specific screening tools, prepared specialists, and accountability for who gets identified and served. Many systems currently lack these systems and structures.

What Exactly Are We Trying to Identify?

Dyscalculia means something more specific than struggling in math, and that specificity matters enormously for policy. Despite decades of research, as Devine and colleagues observed, "there is no agreed definition [of the condition]."[9]

That absence of consensus makes careful system design essential, especially around a distinction that most schools currently do not make. Beneath the single label "struggling in math" sit three groups of students with genuinely different needs. The distinction between difficulty arising from external or general cognitive factors and difficulty rooted in numerical processing itself echoes a longstanding clinical distinction between secondary and primary dyscalculia.[10] The first group struggles in math for identifiable external reasons: inadequate instruction, interrupted schooling, language barriers, economic hardship, or absenteeism. Many of these students respond well to improved instruction and targeted academic support. The second group has persistent math difficulties that do not resolve with ordinary interventions; these students need more intensive, sustained instruction within existing tiered frameworks. The third group has dyscalculia specifically: severe and persistent difficulty with number processing, arithmetic fact retrieval, and calculation that is distinct from intellectual disability and cannot be better explained by inadequate schooling, sensory difficulties, or another primary condition. Dyscalculia that goes untreated persists into adulthood.[11]

The DSM-5 framework operationalizes this third category through three requirements: severity (i.e., mathematics skills substantially below age expectations), persistence (i.e., difficulties lasting at least six months despite targeted intervention), and specificity (i.e., deficits not better explained by inadequate instruction, intellectual disability, or other developmental conditions).[12] Students who meet these criteria show deficits in number processing and magnitude representation and have a distinct cognitive profile, not simply a more severe version of ordinary math struggle.

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9 Devine et al., "Gender Differences in Developmental Dyscalculia," 31.

10 Price and Ansari, "Dyscalculia: Characteristics, Causes, and Treatments," 2.

11 Kaufmann and von Aster, "The Diagnosis and Management of Dyscalculia," 767.

12 Morsanyi et al., "The Prevalence of Specific Learning Disorder in Mathematics," 918-919; Haberstroh and Schulte-Körne, "The Diagnosis and Treatment of Dyscalculia," 107.

The policy significance of how the line is drawn is visible in a single comparison. In a UK longitudinal study of 2,421 primary students, applying DSM-5 criteria identified 5.7% of students as having a specific learning disorder in mathematics. Applying the older DSM-IV criterion, which required a significant discrepancy between math performance and IQ, identified only 1.12% of the same students.[13] Five times as many students in the same sample were reachable under updated criteria. How systems define the target population is a policy choice that determines who gets identified and who does not.

Comorbidity with other conditions is common and affects which students are identified as having dyscalculia. Between 20% and 60% of students with dyscalculia have co-occurring difficulties, most prominently dyslexia and ADHD.[14] Language or communication difficulties are present in roughly half of those formally identified.[15] These combinations do not disqualify a student from receiving a dyscalculia identification, but they underscore a diagnostic challenge that often requires specialized expertise rather than relying solely on classroom teacher judgment.

Why Do Students with Dyscalculia Fall Through the Cracks?

Students with dyscalculia are often missed because most teachers are not equipped to notice them. A UK study, the first of its kind, found awareness of dyscalculia to be strikingly low. Only about one in five practitioners reported strong familiarity with it, the lowest among the common specific learning difficulties surveyed. Awareness was associated with special-education-specific experience rather than general years of teaching, and general teaching experience predicted awareness of dyslexia but not of dyscalculia. While the population was not US-based, the findings highlight the importance of not relying exclusively on classroom experience alone for recognition of the condition. The authors concluded that reducing those misconceptions requires knowledge of dyscalculia's underlying cognitive mechanisms, not simply more awareness or experience.[16] These misconceptions carry a human cost. When teachers do not understand the nature of a specific learning disability, a student's genuine difficulty with math is often misread as laziness or a lack of effort rather than recognized as a disability that warrants support, a misattribution that can undermine the student's standing in the classroom.[17] Without that knowledge, teachers cannot distinguish a student whose persistent math difficulty reflects a neurological learning disability from one whose difficulty has instructional, linguistic, or motivational origins.

13 Morsanyi et al., "The Prevalence of Specific Learning Disorder in Mathematics," 930.

14 Kaufmann and von Aster, "The Diagnosis and Management of Dyscalculia," 767; Morsanyi et al., "The Prevalence of Specific Learning Disorder in Mathematics," 917.

15 Morsanyi et al., "The Prevalence of Specific Learning Disorder in Mathematics," 917.

16 Van Herwegen, Outhwaite, and Herbert, "Neuromyths about Dyscalculia and Dyslexia," 237-239.

17 Ergan, "Exploring Epistemic Injustice in Dyscalculia," 8.

Even when students with dyscalculia are noticed, the system often fails to connect that recognition to appropriate support. A large-scale longitudinal study found that 81% of students in Northern Ireland with a dyscalculia profile had been identified by their schools as having special education needs, though whether those students received any math-specific support was unclear from school records.[18] Being labeled is not the same as being served, and most systems currently lack a clear pathway from a teacher's concern about persistent math difficulty to a formal evaluation and targeted intervention designed specifically for a math learning disability. Unlike the identification of early literacy issues, the identification of math-related disabilities rarely follows a routine pathway from universal screening to risk flagging, diagnostic follow-up, and targeted intervention. As a result, recognition often depends on whether an individual teacher, school psychologist, or parent knows enough about dyscalculia to press for further evaluation.

When it comes to which students get missed, there are equity issues that the research base cannot yet fully resolve. A study in Northern Ireland showed that students with persistent math difficulties are more likely to come from economically disadvantaged backgrounds. Students who have recently immigrated and are still acquiring the language of instruction are also over-represented among struggling math learners; their difficulty is attributed more readily to language or environmental factors than to a neurological learning disability.[19] Findings on gender are unsettled. A UK study found that apparent gender differences emerged only under discrepancy-based definitions; a Northern Ireland study found no gender difference, and a US birth cohort found that boys were more frequently affected under every formula tested. That disagreement is itself a policy point. A system's choice of criteria can shape which students, and which genders, are identified at all.[20] The literature on race- and ethnicity-disaggregated dyscalculia identification is, as far as we are aware, essentially absent because systems do not systematically collect or report it, making the equity dimensions of these gaps difficult to assess, let alone address.

The cost of missing these students compounds year over year, because math learning is cumulative. Underdeveloped foundational skills such as subitizing (i.e., instantly recognizing small quantities), number sense, and pattern recognition undermine later learning of fractions, which in turn undermines algebra, so early gaps widen rather than close on their own. Yet, identification tends to come late. Dyscalculia is typically recognized later than other specific learning disabilities, in part because teacher awareness is low and diagnostic criteria remain subjective.[21] It is slowed further by how learning disabilities have long been identified. Where the IQ-achievement discrepancy approach is still used, it withholds support

18 Morsanyi et al., "The Prevalence of Specific Learning Disorder in Mathematics," 930.

19 Morsanyi et al., "The Prevalence of Specific Learning Disorder in Mathematics," 927-929.

20 Devine et al., "Gender Differences in Developmental Dyscalculia," 31; Morsanyi et al., "The Prevalence of Specific Learning Disorder in Mathematics," 930; Barbaresi et al., "Math Learning Disorder," 281-289.

21 Ergan, "Exploring Epistemic Injustice in Dyscalculia," 6.

until a student has fallen far enough behind for a gap to register. Response to Intervention (RTI), though federal law now permits it as an alternative identification method, is no more reliable at the individual level. Both point toward confirming identification across multiple stages rather than acting on any single result.[22] But by the time many of these students are identified, remediation is harder. A US meta-analysis of mathematics interventions for students in grades 4 through 12 found only a moderate average effect. The authors concluded that remediation is more challenging for older students, whose difficulties are more complex and entrenched, than for younger ones, underscoring the value of identifying dyscalculia early.[23]

What Should Early Identification Look Like?

Most schools that identify students with math difficulty use achievement data that answers the wrong question. A grade-level test reveals that a student is performing below expectations. It does not reveal why, which mathematical processes are involved, or whether the difficulty is persistent and specific enough to constitute a learning disability. To reach students with dyscalculia, a sequential identification pathway is required, in which each stage serves a distinct purpose, and the tools at each stage match that purpose. However, the vast majority of measurement tools along this pathway, outlined below, are normed on European populations. Moreover, many of the math assessments common in US schools (e.g., WIAT, KeyMath, WRAT, Woodcock-Johnson, WISC) measure achievement or IQ and therefore do not yield the types of inferences needed. Any tools referenced in footnotes are for informational purposes only and should be carefully reviewed prior to use.

A sequential identification pathway should begin with universal screening. A first-stage screener should be brief, sensitive, and administered to all students, with the goal of flagging students who warrant closer examination rather than confirming a diagnosis.[24] Instruments that assess core numerical capacities, particularly symbolic and nonsymbolic magnitude comparison (i.e., tasks that ask a student to judge which of two quantities is larger, shown as either digits or sets of objects), are sensitive to the numerical-processing deficits characteristic of dyscalculia and can flag students who warrant closer examination.[25] Brief computerized screeners can accomplish this efficiently at a classroom or school level. The appropriate cutoff for a first-stage screener should be set to maximize sensitivity, accepting some false positives because the next stage will provide

22 Fletcher and Miciak, "Assessment of Specific Learning Disabilities and Intellectual Disabilities," 56.

23 Stevens, Rodgers, and Powell, "Mathematics Interventions for Upper Elementary and Secondary Students," 335.

24 Two tools mentioned are a two-minute paper-and-pencil measure of symbolic and nonsymbolic magnitude processing developed by Nosworthy et al. (2013) and validated with 160 Canadian primary students, and Butterworth's *Dyscalculia Screener* (2003), a computer-based tool for ages 6-14 normed in the United Kingdom.

25 Haberstroh and Schulte-Körne, "The Diagnosis and Treatment of Dyscalculia," 107-108.

the necessary specificity. As such, sound screening policy focuses on identifying students who warrant referral for formal evaluation, while avoiding a diagnosis or the assignment of a label until additional, more specific information is available.

At the second stage, diagnostic follow-up identifies the source and profile of difficulty. For students flagged at risk, individual assessment should shift from curricular tests, which measure performance against grade-level content, to neuropsychologically oriented tools (i.e., assessments that examine the mental processes students use to understand numbers and solve math problems) designed to assess the underlying processes, including symbolic and nonsymbolic number sense, magnitude comparison, counting principles, arithmetic fact retrieval, place value understanding, and the role of working memory and executive function when relevant.[26] This distinction between curricular tests and neuropsychological tools is the difference between knowing a student is behind and knowing why, which is the only basis for building a targeted intervention. States and districts should also monitor whether students have equal access to diagnostic follow-up after being identified as at-risk, especially across schools serving different concentrations of low-income students, English learners, students of color, and other historically underserved groups.

Persistence of a student's challenges must be verified before a diagnosis is made. Single-point screening can overestimate dyscalculia prevalence. In a screening study of second and third graders in China, a single round of testing flagged about 4.5% of students as potentially having dyscalculia; far fewer met the threshold on a second round a year later.[27] The DSM-5 requirement that difficulties persist for at least six months despite targeted intervention reflects the same logic: a student's response to well-delivered instruction is itself diagnostic information.[28] Identification systems that trigger formal evaluation based on a single low score risk misclassifying students whose difficulties are instructional rather than neurological.

During the final stage of a full evaluation, alternative explanations for the persistent difficulties should be ruled out. Formal evaluation should document whether difficulty can be better accounted for by inadequate instruction, language factors, extended absence, intellectual disability, sensory difficulties, or other primary conditions.[29] Family history of dyscalculia and evidence of numeracy difficulties in the preschool years serve as supportive criteria when

26 One tool mentioned is the Mathematical Profile Test (MathPro Test), an online, collectively administered battery of eighteen subtests with automatic scoring. Its published evaluation is preliminary and based on 622 primary students in Belgium; the authors describe it as promising rather than validated for wider use. See Karagiannakis and Noël, "Mathematical Profile Test," 126; and, on the cognitive framework underlying it, Noël and Karagiannakis, *Effective Teaching Strategies for Dyscalculia.*

27 Li, Zhang, and Zhang, "What Skills Could Distinguish Developmental Dyscalculia," 261-262.

28 Morsanyi et al., "The Prevalence of Specific Learning Disorder in Mathematics," 919.

29 Haberstroh and Schulte-Körne, "The Diagnosis and Treatment of Dyscalculia," 110-111.

present. In populations with low math achievement due to systemic instructional gaps, psychometric cutoffs alone may be insufficient to distinguish dyscalculia from the consequences of inadequate opportunity. In such contexts, response-to-instruction data carry particular diagnostic weight.

What Should Intervention Look Like?

The evidence base for dyscalculia intervention is more developed than is commonly recognized, and its central finding shows that intervention works. A German clinical practice guideline meta-analysis of intervention trials found a mean effect size of 0.52 across numerical and quantitative processing, arithmetic operations, and word-problem solving.[30] A US meta-analysis of interventions for students in grades 4 through 12 with mathematics difficulty or disability estimated a raw effect of 0.85, which fell to a moderate 0.49 after adjusting for small-study effects, with substantial unexplained variation between studies.[31] Both point toward meaningful gains from targeted intervention. The figures are not directly comparable, since only the US estimate is corrected for publication bias, and the correction itself indicates how much the underlying literature may overstate what intervention delivers.[32]

The evidence most consistently shows that symptom-specific interventions targeting the mathematical processes identified as affected in a student's diagnostic profile outperform generic approaches. Programs that build number representation, magnitude processing, arithmetic fact retrieval, and number-line understanding yield stronger, more durable gains than domain-general cognitive training such as working-memory exercises alone.[33] Reviews of school-based intervention, drawing substantially on US studies, similarly find that explicit, targeted instruction improves the mathematics achievement of students who struggle.[34] The diagnostic profile developed during identification provides the input that determines what the intervention should address.

Delivery also matters as much as content. The German guideline's meta-analysis found stronger effects when treatment was delivered by prepared specialists in individual sessions of at least 45 minutes, with group delivery associated with a small but statistically reliable reduction in effect and shorter sessions with a

30 Haberstroh and Schulte-Körne, "The Diagnosis and Treatment of Dyscalculia," 107.
31 Stevens, Rodgers, and Powell, "Mathematics Interventions for Upper Elementary and Secondary Students," 327.
32 Stevens, Rodgers, and Powell, "Mathematics Interventions for Upper Elementary and Secondary Students," 327; Haberstroh and Schulte-Körne, "The Diagnosis and Treatment of Dyscalculia," 107-108.
33 Haberstroh and Schulte-Körne, "The Diagnosis and Treatment of Dyscalculia," 107; Kaufmann and von Aster, "The Diagnosis and Management of Dyscalculia," 770.
34 Monei and Pedro, "A Systematic Review of Interventions for Children Presenting with Dyscalculia," 279.

larger but less certain one.[35] US systems typically deliver intervention through tiered, small-group models, so the practical lesson is not that group instruction is disqualified; it is that dyscalculia support requires prepared personnel, protected time, a session length the guideline sets at 45 minutes or more, and a structured plan, rather than incidental accommodation in a general education classroom or a brief pull-out. Districts should also examine whether access to intervention of adequate intensity is equitably distributed across schools, or whether students in better-resourced settings are more likely to receive it.

Comorbid conditions and math anxiety must also be addressed alongside mathematical skill-building. Students whose dyscalculia co-occurs with reading disorders or elevated math anxiety show weaker responses to standard intervention programs, and anxiety that goes unaddressed creates a vicious cycle in which repeated failure deepens avoidance, which in turn limits the time-on-task that any intervention requires to work.[36] Effective support should treat the emotional and the academic dimensions as inseparable.

Computer-assisted instruction shows promise for building number-combination skills.[37] But a systematic review of school-based dyscalculia interventions found that computer-aided instruction still depended on teachers to operate and implement it, and concluded that the quality of instruction mattered more than the delivery environment.[38] At present, technology should not be positioned as a substitute for specialist-delivered instruction.

What Should States and Districts Do?

To understand the current status of dyscalculia identification among students, we conducted a scan of recent math policies and bills across all 50 states. Our scan indicates a lack of consensus on how to define, identify, and support dyscalculia or other math learning disabilities.[39] A handful of states (e.g., North Carolina, West Virginia) mention dyscalculia in recent bills, but without any provision requiring screening or diagnosis. A larger number of states (e.g., Arkansas, Maryland, Montana, South Carolina, Tennessee, Utah, Virginia) have enacted policies recommending math screening for students considered at-risk, but they do not

35 Haberstroh and Schulte-Körne, "The Diagnosis and Treatment of Dyscalculia," 112. The guideline reports a reduction of 0.19 (95% CI -0.37 to -0.01) for group settings and 0.49 (95% CI -1.02 to 0.04) for sessions under 45 minutes; the latter interval includes zero.

36 Hussain and Soares, "Dyscalculia," 258; Kaufmann and von Aster, "The Diagnosis and Management of Dyscalculia," 770.

37 Monei and Pedro, "A Systematic Review of Interventions for Children Presenting with Dyscalculia," 285-286.

38 Monei and Pedro, "A Systematic Review of Interventions for Children Presenting with Dyscalculia," 286.

39 These findings are limited to scans, rather than a close reading of the full text of every state-level math bill. These findings are accurate to the best of our understanding at the time of publication, but the inability to give a definitive count or classification of dyscalculia policies hints at the inherent difficulties in understanding decentralized educational policies.

establish a dyscalculia-specific identification pathway.[40] These state policies leave the adoption of screening measures up to the discretion of individual districts and provide a recommendation rather than a mandate. Other states (e.g., Alabama, Florida, Iowa, Kentucky, Mississippi, Oklahoma, Rhode Island) have established or attempted to establish mandates for universal screening of students within a specific grade band (often K-3 or K-6). Our scan did not indicate the extent to which these policies have been enacted, enforced, or even passed into law. The remaining states rely entirely on the federal IDEA referral process, a reactive system that identifies students only after a pattern of prolonged failure has already taken hold. For math-related disabilities, especially dyscalculia, specificity matters, as policies that address math difficulty in general terms do not automatically reach a student whose difficulty is neurological in origin.

For state policymakers, the foundational step is to require early numeracy screening, accompanied by a mandatory response plan. Screening without the capacity to intervene tells schools which students need help but provides no mechanism to help them. States building or updating screening mandates should specify that the screening protocols include core numerical processing tasks, not only curriculum-based achievement measures, and that a flagged result triggers a defined assessment and intervention response. States should also follow the precedent set by reading-disability policy, where screening is built into statewide assessment systems rather than left to local discretion. Embedding math screening into statewide assessment systems would reduce the current reliance on whether an individual teacher or school leader is aware of dyscalculia and chooses to advocate for a student.

State guidance on what a math learning disability evaluation must include is the second lever. Currently, evaluation quality depends heavily on district capacity and, in many cases, on whether a family has the resources and knowledge to advocate. Guidance specifying the required components of a dyscalculia evaluation (e.g., psychometric assessment of numerical processing, clinical examination, developmental and family history, and systematic exclusion of alternative explanations) would reduce that variation and establish a floor below which no district falls.[41]

Teacher licensure and preparation standards are the third lever and the one most consistently overlooked in current math reform legislation. As the awareness finding discussed earlier showed, familiarity with dyscalculia does not come with general teaching experience; it is associated instead with special education experience, and even that familiarity does not guarantee accurate understanding.[42] States should require demonstrated competency in recognizing and responding to math learning disabilities as part of licensure standards for

40 In June 2026, Utah made math screening optional. Visit ExcelinEd's Math Matters website for updates.

41 Haberstroh and Schulte-Körne, "The Diagnosis and Treatment of Dyscalculia," 110-111.

42 Van Herwegen, Outhwaite, and Herbert, "Neuromyths about Dyscalculia and Dyslexia," 237.

elementary and special education teachers and school psychologists. School psychologists must know which cognitive mechanisms dyscalculia disrupts; familiarity with the label alone is not enough.

Accountability and equity reporting are the fourth lever. A mandate that does not require reporting on who is screened, assessed, and served cannot be monitored or held accountable for failing to reach students. The pattern noted earlier, of students widely flagged as having special educational needs with no record of math-specific support, is the precise failure these requirements exist to prevent.[43] States should require districts to report identification and service rates disaggregated by school poverty level, race and ethnicity, English learner status, and gender. As noted earlier, the data needed to determine whether these gaps fall unevenly across groups do not yet exist; this reporting requirement would create them.

For district leaders, the starting point is a candid infrastructure audit. How many students in the district are currently receiving support specifically for a math learning disability, and does that number approximate the prevalence predicted by research? If the numbers do not reconcile, that gap requires investigation. Districts should similarly assess whether their intervention infrastructure for math, including specialist roles, validated intervention programs, and protected intervention time, is comparable to what exists for reading. In most districts, it is not, and acknowledging that gap is the first necessary step toward closing it.

A clear, school-wide referral protocol for math learning concerns is the operational counterpart to that infrastructure investment. Teachers need to know exactly what to do and what to expect when they flag a student for persistent math difficulty, just as they do for reading difficulty. Without that protocol, concern does not reliably translate into assessment, and assessment does not reliably translate into support. Districts should designate qualified interventionists or math specialists responsible for dyscalculia-specific assessment and intervention, and monitor whether referral, evaluation, and service rates differ across schools with different demographics, treating any observed disparities as systemic equity problems rather than school-level issues.

It is important to note that unfunded mandates tend to produce compliance rituals rather than changes in practice. A dyscalculia policy that requires screening but does not fund the personnel, time, and materials for intervention will identify more students without helping more of them. The same realism applies to staffing. The qualified interventionists and school psychologists these systems require are in short supply, and adding competency mandates to licensure will not immediately increase the number of prepared professionals in the workforce. States that adopt screening ahead of that capacity should pair it with funded preparation pathways, or the response plan will exist only on paper.

43 Morsanyi et al., “The Prevalence of Specific Learning Disorder in Mathematics,” 930.

What Would Success Look Like?

A successful state or district approach to dyscalculia should be visible in both student experience and system data. Students with severe, persistent math difficulty are identified early, assessed carefully, taught differently, and monitored consistently before repeated failure hardens into anxiety, avoidance, and narrowed academic choices.

At the student level, success means a teacher recognizes that ordinary practice is not enough; a referral pathway is clear and readily usable; diagnostic assessment identifies the specific processes that are affected; intervention is delivered by someone prepared to provide it; and progress monitoring catches non-response early. The student's academic identity is no longer organized around the belief that understanding math is simply beyond reach.

At the system level, success means the numbers add up. Screening rates, referral rates, evaluation rates, and service rates are visible by school, grade, race and ethnicity, English learner status, gender, disability status, and poverty level. Districts know whether the number of students receiving dyscalculia-specific support aligns with research predictions, and whether access to diagnostic follow-up and specialist intervention varies across schools.

The evidence base is sufficient to act, and when states and districts take appropriate action, the indicators move. The share of students receiving dyscalculia-specific support climbs toward what research predicts, schools no longer wait until failure has compounded to identify dyscalculia, and math disabilities are screened for, evaluated, and funded in the same way that reading disabilities already are. State leaders establish the policy conditions, district leaders build and audit the systems, and teachers recognize students who have been invisible for too long. When all of this happens, a student who was once quietly written off as "bad at math" is found early, understood precisely, and taught by someone equipped to help.

References

American Psychiatric Association. *Diagnostic and Statistical Manual of Mental Disorders*. 5th ed. Arlington, VA: American Psychiatric Association, 2013.

Barbaresi, William J., Slavica K. Katusic, Robert C. Colligan, Amy L. Weaver, and Steven J. Jacobsen. “Math Learning Disorder: Incidence in a Population-Based Birth Cohort, 1976-82, Rochester, Minn.” *Ambulatory Pediatrics* 5, no. 5 (2005): 281-89.

Butterworth, Brian. *Dyscalculia Screener.* London: nferNelson, 2003.

Devine, Amy, Fruzsina Soltész, Alison Nobes, Usha Goswami, and Dénes Szűcs. “Gender Differences in Developmental Dyscalculia Depend on Diagnostic Criteria.” *Learning and Instruction* 27 (2013): 31-39.

Ergan, Saniye Nur. “Exploring Epistemic Injustice in Dyscalculia.” *International Journal of Inclusive Education* (2024). https://doi.org/10.1080/13603116.2024.2430538.

Fletcher, Jack M., and Jeremy Miciak. “Assessment of Specific Learning Disabilities and Intellectual Disabilities.” *Assessment* 31, no. 1 (2024): 53-74.

Haberstroh, Stefan, and Gerd Schulte-Körne. “The Diagnosis and Treatment of Dyscalculia.” *Deutsches Ärzteblatt International* 116, no. 7 (2019): 107-114.

Hussain, Khadijah, and Neelkamal Soares. “Dyscalculia.” *International Journal of Child Health and Human Development* 15, no. 3 (2022): 249-262.

Karagiannakis, Giannis, and Marie-Pascale Noël. “Mathematical Profile Test: A Preliminary Evaluation of an Online Assessment for Mathematics Skills of Children in Grades 1–6.” *Behavioral Sciences* 10, no. 8 (2020): 126. https://doi.org/10.3390/bs10080126.

Kaufmann, Liane, and Michael von Aster. “The Diagnosis and Management of Dyscalculia.” *Deutsches Ärzteblatt International* 109, no. 45 (2012): 767-778.

Kurz, Alexander, and Shauna Campbell. *Navigating the Math Wars: A Practical Guide to the Divides and Debates Influencing Math Instruction.* Tempe, AZ: Center on Reinventing Public Education, Mary Lou Fulton College for Teaching and Learning Innovation, Arizona State University, 2026.

Li, Danfeng, Xuan Zhang, and Li Zhang. “What Skills Could Distinguish Developmental Dyscalculia and Typically Developing Children: Evidence From a 2-Year Longitudinal Screening.” *Journal of Learning Disabilities* 56, no. 4 (2023): 257-277.

Monei, Thato, and Athena Pedro. “A Systematic Review of Interventions for Children Presenting with Dyscalculia in Primary Schools.” *Educational Psychology in Practice* 33, no. 3 (2017): 277-293.

Morsanyi, Kinga, Bianca M. C. W. van Bers, Teresa McCormack, and Jemma McGourty. “The Prevalence of Specific Learning Disorder in Mathematics and Comorbidity with Other Developmental Disorders in Primary School-Age Children.” *British Journal of Psychology* 109, no. 4 (2018): 917-940.

Noël, Marie-Pascale, and Giannis Karagiannakis. *Effective Teaching Strategies for Dyscalculia and Learning Difficulties in Mathematics: Perspectives from Cognitive Neuroscience*. Abingdon, UK: Routledge, 2022.

Nosworthy, Nadia, Stephanie Bugden, Lisa Archibald, Barrie Evans, and Daniel Ansari. “A Two-Minute Paper-and-Pencil Test of Symbolic and Nonsymbolic Numerical Magnitude Processing Explains Variability in Primary School Children’s Arithmetic Competence.” *PLoS ONE* 8, no. 7 (2013): e67918. https://doi.org/10.1371/journal.pone.0067918.

Parsons, Samantha, and John Bynner. *Does Numeracy Matter More?* London: National Research and Development Centre for Adult Literacy and Numeracy, 2005.

Price, Gavin R., and Daniel Ansari. “Dyscalculia: Characteristics, Causes, and Treatments.” *Numeracy* 6, no. 1 (2013): article 2.

Rapin, Isabelle. “Dyscalculia and the Calculating Brain.” *Pediatric Neurology* 61 (2016): 11-20.

Stevens, Elizabeth A., Melissa A. Rodgers, and Sarah R. Powell. “Mathematics Interventions for Upper Elementary and Secondary Students: A Meta-Analysis of Research.” *Remedial and Special Education* 39, no. 6 (2018): 327-340.

Van Herwegen, Jo, Laura A. Outhwaite, and Emily Herbert. “Neuromyths about Dyscalculia and Dyslexia among Educators in the UK.” *British Journal of Special Education* 51, no. 2 (2024): 233-242.

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