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Opening the Gate:
Literature Review on Algebra and College Math Access for Latino Students and English Learners

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Algebra I has long served as a critical gatekeeper in the American education system, determining students' access to advanced mathematics coursework, college opportunities and STEM ("science, technology, engineering and math ") careers, and this is particularly true for both Latino students and English learners. This literature review synthesizes findings published between 2010 and 2025 that examine two key junctures in the mathematics pipeline where policy decisions are especially consequential: eighth grade algebra placement in K-12 and college-level entry courses such as remedial math and Math 101. Across these bodies of work, persistent racial and linguistic disparities in mathematics achievement and attainment emerge, reflecting not only individual differences in ability or preparation but also the cumulative effects of systemic inequities embedded throughout the K-16 pipeline.

This review investigates how institutional sorting practices, resource inequities, policy reforms, language demands and cultural factors interact to shape Latino students' and English learners' opportunities to learn and succeed in algebra and gateway college math. Through systematic coding and analysis of research spanning multiple states and policy contexts, four interconnected themes emerge: 1) the role of tracking, placement practices that perpetuate systemic inequities, and misalignment across the secondary and postsecondary pipeline; 2) the mixed outcomes of broad policy reforms versus targeted interventions; 3) the critical influence of student identity, culture and language on mathematical engagement; and 4) inequitable distribution of qualified teachers and instructional resources. Together, these themes suggest that closing opportunity and achievement gaps for Latino students and English learners will require not only improving instruction but also redesigning the policies that govern who gains access to rigorous math pathways, when, and with what supports.

Findings

Theme 1: Tracking, Systemic Inequities and Misalignment Across the Secondary-Postsecondary Math Pipeline

Taking Algebra I early enables students to progress through a more advanced sequence of math courses and makes it feasible to reach calculus by their senior year (Morton and Riegle-Crumb 2019). Algebra and the subsequent classes (Geometry, Algebra II, Precalculus and Calculus) are associated with enrollment in more selective postsecondary institutions, stronger persistence in college, a higher likelihood of entering STEM careers, reduced reliance on public assistance and higher lifetime earnings (Edosomwan et al. 2024; Heavin and Ma 2022). In addition, algebra has documented economic benefits for future workers, where "algebra skills may contribute directly to labor productivity" (Clotfelter et al. 2015). Given these benefits, state and district decisions about when students may enroll in Algebra I, how they are placed and what accountability incentives attach to early algebra function as de facto gatekeeping policies in the K-16 system.

Despite these benefits, Latino students and English learners continue to enroll in algebra at lower rates than their white peers (Dougherty et al. 2015; Kalogrides and Loeb 2013; Morton and Riegle-Crumb 2019; Brummet et al. 2024). Morton and Riegle-Crumb (2019) found that white students take algebra at 61.3% versus only 28.4% for Hispanic students (11). Handsman et al. (2022) note that white and affluent students "often take the course earlier than low-income students and Black and Latinx students" (216), reflecting long-standing patterns of tracking across the middle-to-high school transition. Studies show that many students repeat Algebra I in ninth grade after taking it in eighth grade, which creates a "curricular disruption" that undermines later course taking and achievement; only 60% of Black and Latino students persist on the accelerated track compared to 77% of white students and even higher rates for Asian students (Irizarry 2021). These findings indicate that district placement policies, counselor guidance and credit recognition rules at the middle-to-high school transition can either preserve or erase algebra gains, with disproportionate consequences for Latino students. Irizarry (2021) further finds that white Latino and non-Black Latino students have odds of staying on the accelerated track that are about 0.69 and 0.59 times those of white students, respectively, with the odds dropping to about 0.26 for Black Latino students. Research on the transition from eighth to ninth grade shows that Black Latino students are much more likely than their white and Asian classmates to be knocked off the accelerated track during the move to high school — a pattern described as "curricular resorting" that deepens racial gaps in advanced math (Irizarry 2021). Completing this evidence, a study of nine California districts revealed that a disproportionate number of students of color who were proficient in Algebra I at the end of middle school were nonetheless asked to repeat Algebra I in high school, putting them on a lower-level math pathway (LaMar et al. 2020).

Early algebra and peer-composition research shows that the share of eighth graders taking algebra more than doubled to 46% from 1990 to 2013, but by 2022 it had fallen back to 36%, highlighting how unstable and uneven access to early algebra has been over time (Brummet et al. 2024). This back-and-forth plays out in a system that is already divided by race, class and language, where segregation and tracking work together to decide who gets challenging math and who does not. Research has documented how students of color, low-income students and English learners are concentrated in schools and programs with fewer resources and less access to advanced coursework, while white and more affluent students are more likely to experience well-resourced schools and college preparatory tracks (Mickelson et al. 2013; Morton and Riegle-Crumb 2019, 2020; Ngo and Velasquez 2020). Research finds that going to a racially segregated school is linked to lower math achievement and that these harms grow as students move into middle and high school, just when algebra and higher-level courses matter most (Mickelson et al. 2013).

Similar course placement practices and tracking are common when students transition from high school to college. Melguizo and Ngo (2020) show that many students who appear "college ready" by high school standards are nonetheless placed into remedial math at local community colleges, revealing misalignment between K-12 graduation requirements and community college placement policies. Purnell and Burdman (2021) report that about 20% of community college students nationally, and more than 40% in California, are unnecessarily repeating math courses they already passed in high school. This sort of tracking can place students in a "math trap" where math course taking is characterized by repetition and immobility (Ngo and Velasquez 2020). Across high school and college, 92% of students repeated at least one math level at least twice, and 53% repeated a math level at least three times. About 35% had Algebra I as their most repeated course, and 29% had Algebra II, indicating that students are often stuck redoing the same content (Ngo and Velasquez 2020). Ngo and Velasquez (2020) go on to find that 48% of community college math enrollees never surpassed the highest level of math they had reached in high school, 18% ended college in a course one level below their highest high school math, 19% ended college at two levels below their highest high school math, and only 29% took math above their high school level (20-21). The probability of being trapped was 5 percentage points higher for Latino students than white students, even after controlling for GPA, highest high school math, campus and initial placement (Ngo and Velasquez 2020).

Powers and An (2023) show that English learners are often assigned to lower-level math courses than English-proficient peers even with similar prior achievement, which reduces their likelihood of reaching Algebra II and limits their access to college-preparatory sequences. In essence, placement tests and traditional placement policies over-assign students, especially students of color and language-minority students, to remedial math they may not need, effectively recreating tracking at the college entry point (Powers and An 2023; Purnell and Burdman 2021). These patterns underscore the need for placement reforms (e.g., use of multiple measures, transcript-based placement, corequisite models) if community colleges are to function as engines of mobility rather than extensions of K-12 tracking.

Course placement practices across the middle school, high school and college transitions therefore function as a powerful mechanism for either extending or constraining educational opportunity. Rather than simply reflecting individual merit, they systematically advantage white, affluent and English-proficient students while disproportionately holding Latino students and English learners in lower tracks, redundant coursework and remedial sequences they may not need (Irizarry 2021; LaMar et al. 2020; Melguizo and Ngo 2020; Ngo and Velasquez 2020). If algebra and subsequent math courses operate as gateways to selective college, STEM fields and long-term economic security, then inequitable placement practices effectively sort students into divergent tracks along lines of race, class and language. Addressing these patterns will require more than expanding nominal access to Algebra I; it demands intentional redesign of state and district placement policies, accountability systems, funding and staffing models, and supports for multilingual learners, so that early algebra, advanced coursework and college-level math function as genuine gateways rather than as contemporary forms of segregation in the mathematics pipeline.

Theme 2: Policy Reforms and Intervention Outcomes

States and districts have adopted a wide range of math policies to give more students access to algebra and college-level courses. The research in this review shows a consistent pattern: When reforms focus mainly on moving students faster, without changing support structures or addressing underlying inequities, they often produce weak or negative results for Latino students and English learners. By contrast, policies that rethink who gets identified for advanced courses and what supports accompany that access tend to yield more promising and more equitable outcomes.

The first set of reforms tried to push algebra earlier for large groups of students. In California, state accountability pressures and a 2008 decision to make the state's Algebra I exam the standard test for all eighth graders led to placing many more students into eighth grade algebra, more than tripling enrollment in over a decade (Domina et al. 2014, 2015; Hanselman et al. 2022; Austin 2020; Chang et al. 2023). However, analyses of district and state data indicate that these acceleration policies produced, at best, mixed achievement effects, including declines on the California High School Exit Exam (CAHSEE) math section and widened gaps in under-resourced districts serving large numbers of Latino students when early algebra was scaled without enough qualified teachers or instructional support (Domina et al. 2014, 2015; Handsman et al. 2022; McEachin et al. 2020; Brummet et al. 2024). Similarly, in Charlotte-Mecklenburg and Guilford County, North Carolina, aggressive districtwide acceleration into Algebra I in the early 2000s increased access on paper but lowered Algebra I and geometry performance for moderately prepared students and did not generate consistent gains in later math, with the most negative effects in high-poverty, high-minority schools (Clotfelter et al. 2015; Domina et al. 2015; Chang et al. 2023). Taken together, these examples suggest "Algebra for All" mandates and early acceleration, when implemented as stand-alone policies, risk expanding enrollment without expanding learning, particularly for Latino students and English learners in under-resourced schools (Domina et al. 2015; Austin 2020; Chang et al. 2023).

Other systems have used more targeted, rules-based placement policies to broaden access. In Wake County, North Carolina, district leaders adopted a rules-based placement policy that relies on the SAS EVAAS (Education Value-Added Assessment System) software, using roughly 70% predicted-success threshold to decide who should be accelerated into advanced middle-grades math (Dougherty et al. 2015; McEachin et al. 2020). This change sharply increased acceleration and doubled the rate at which eligible Black and Hispanic students were placed into advanced math, substantially shrinking race and income gaps among students with similar prior achievement (Dougherty et al. 2015). Although Latino students remained underrepresented relative to their enrollment share, Wake County's experience illustrates how transparent, data-driven placement criteria can reduce the influence of subjective bias and open advanced coursework to students who had previously been overlooked (Dougherty et al. 2015; Domina et al. 2016; McEachin et al. 2020).

Chicago's reforms underscore how design and implementation choices shape equity impacts. The district's universal ninth grade "Algebra for All" policy increased algebra credit accumulation but did not improve test scores, graduation or college outcomes overall; for Latino students, who were disproportionately concentrated in under-resourced schools, the universal mandate sometimes added pressure without improving learning (Cortes et al. 2015; Domina et al. 2014; Douglas and Attewell 2017; Powers and An 2023). In contrast, Chicago's Double-Dose algebra policy, assigning low-scoring ninth graders to two periods of algebra, produced short-term gains in GPA and test scores and longer-term gains in ACT scores, graduation and college entry, especially in schools where Double-Dose classes were not fully segregated by skill level (Cortes et al. 2015; Nomi and Raudenbush 2016; Nomi et al. 2021). Hispanic students benefited, although to a

somewhat lesser extent than Black students without fully overcoming language and poverty barriers (Cortes et al. 2015; Powers and An 2023). These findings highlight that targeted intensification, when paired with attention to classroom composition and instructional quality, can support students more effectively than broad, unsupported acceleration (Nomi and Raudenbush 2016; Nomi et al. 2021).

At the secondary-postsecondary transition, reforms have focused on redesigning developmental math and gateway courses. Florida's Senate Bill 1720 (passed in 2013) made developmental education optional for many students in the state college system, increasing direct placement into college-level math (Hu and Hu 2022; Park et al. 2018). This change expanded immediate access to credit-bearing courses, but evaluations show mixed results, with underprepared and racially minoritized students in some colleges experiencing higher failure or withdrawal rates when placed into gateway math without sufficient support (Hu and Hu 2022; Hu et al. 2023). The City University of New York (CUNY) pursued a different strategy, replacing remedial algebra for many students with a corequisite statistics model in which students enroll directly in college statistics alongside a support workshop. Logue et al. (2016) report that only about 25% of students in the traditional remedial sequence completed a credit-bearing statistics course within two terms, compared to a 55.69% first-term pass rate in the corequisite model, translating into thousands of additional students — many of them low-income and students of color — earning quantitative credits early in college. Complementary evidence from Kentucky's dual-credit college algebra initiative shows that participation improved immediate college enrollment, first-year GPA, time to degree (by 1.44-2.16 months) and bachelor's completion, with especially strong effects for students with lower ACT scores (Heavin and Ma 2022). These results challenge narrow notions of "college readiness" and suggest that with appropriate scaffolds, students traditionally labeled "not ready," including many Latino students and English learners, can succeed in college-level math.

Across these cases, the literature points to a clear policy message. Broad, acceleration-only reforms such as statewide algebra-for-all mandates, universal ninth grade algebra or blanket developmental education opt-outs do not reliably produce better outcomes and can deepen existing inequities for Latino students and English learners when they are implemented in schools and colleges with limited capacity (Domina et al. 2014; Clotfelter et al. 2015; Hu and Hu 2022). In contrast, policies that expand access while simultaneously redesigning placement criteria, adding instructional time or support, and guarding against resegregation — such as Wake County's EVAAS-placement rule, Chicago's better-implemented Double-Dose algebra, CUNY's corequisite statistics model, and equity-minded dual-credit programs — are associated with more meaningful and equitable gains (Dougherty et al. 2015; Nomi and Raudenbush 2016; Nomi et al. 2021; Logue et al. 2016; Heavin and Ma 2022). For policymakers seeking to improve algebra and gateway math outcomes for Latino students and English learners, the key questions are not only how many students are accelerated, but also who is identified, what supports accompany that acceleration, and what safeguards are in place to prevent new forms of tracking and segregation from emerging inside seemingly "universal" reforms.

Theme 3: Student Experience — Identity, Culture and Language

Identity, culture and language sit at the center of this review because they fundamentally shape how Latino students and English learners experience Algebra I and remedial math. The literature shows that sociocultural dimensions such as belonging, family context and cultural capital deeply influence whether students feel they belong in mathematics, how they interpret their own abilities and how they engage with course content. Given these dynamics, it is essential that this literature review attend closely to identity, culture and language as core lenses for understanding the effects of the structural inequities common throughout policy on algebra and gateway college math.

At the core of identity, culture and language is the notion of a "sense of belonging," which can affect a student's math self-efficacy. Math self-efficacy refers to students' beliefs about their capability to successfully perform mathematics tasks and solve math problems, and it is strongly and positively associated with math achievement (Chang et al. 2023; Irizarry 2021; Khazanchi et al. 2024). Research shows that a sense of belonging in mathematics predicts algebra learning, even after controlling for prior algebra knowledge and math self-efficacy, yet underrepresented students report a lower sense of belonging in math than their white and Asian peers (Barbieri and Booth 2016; Barbieri and Miller-Cotto 2021). Math self-efficacy and sense of belonging in mathematics are tightly intertwined, with each reinforcing the other in ways that matter for adolescents' learning and persistence. Students who feel more confident in their math abilities tend to participate more fully, take on challenging tasks and develop identities as "math people," especially when their ability beliefs are supported by interest and external recognition from teachers, peers and family (Barbieri and Miller-Cotto 2021). Conversely, Latino students experience lower belonging in mathematics, report weaker efficacy beliefs, and are less likely to see advanced math and STEM pathways as "for them," even when their prior achievement and interest are comparable to their white and Asian peers (Barbieri and Miller-Cotto 2021; Richards and Kelly 2024). These findings imply that policies that treat Algebra I and entry-level college math as neutral gatekeepers, without attending to climate, representation and recognition, are likely to reproduce existing gaps in who feels entitled to advanced math (Douglas and Attewell 2017).

For Latino students and English learners, language and culture are inseparable from belonging and self-efficacy. Studies of English learners show that English reading proficiency is strongly related to math performance and math self-efficacy, and many English learners fail Algebra I at least once under course-taking and accountability measures (Beal et al. 2010). A striking difference between Latino (U.S.-born) students and English learners surfaced in the data. Morton and Riegle-Crumb (2019) find that 41% of Hispanic students in key studies were classified as "limited English proficient," yet Powers and An (2023) and Ke and Newton (2024) find that Language Other Than English (LOTE) students report higher math self-efficacy than their English-dominant peers even if they performed lower than their peers, suggesting English-medium assessments underestimate bilingual and multilingual students' beliefs in their own learning. Funds-of-knowledge research with Latino families document rich mathematical practices in the home that are rarely recognized at school, while sociocultural work highlights how cultural values such as *respeto, consejos, apoyo* and *sacrificios* shape parents' support for children's math learning (Beltán-Grimm 2024). Interventions such as Mathematics and English Language Development (MELD) — which integrate visual and linguistic supports, foundational prealgebra skills, and opportunities for students to draw on home languages — improve both math outcomes and academic vocabulary for English learners without hindering English-proficient peers (August et al. 2023). Other interventions such as worked example comparison tasks, dual language assessments, integrated math-language instruction and complex instruction also show promising results (Yang et al. 2024; Saxe and Sussman 2019; Simzar et al. 2016; Abdulrahim and Orosco 2020). For example, worked example comparison tasks support English learners' algebra learning by reducing cognitive load (Yang et al. 2024), while integrated math-language instruction and complex instruction benefit English learners' conceptual understanding and participation (Simzar et al. 2016; Abdulrahim and Orosco 2020). Together, this evidence suggests that language and culture are design parameters for algebra and remedial math policy, not background variables to be ignored.

These findings point to several policy levers. First, course placement and acceleration policies (e.g., "Algebra for All" in eighth or ninth grade) must be paired with supports that protect motivation and belonging for historically excluded students, rather than simply moving them into the same structures earlier (Domina et al. 2015; Clotfelter et al. 2015; Austin 2020; McEachin et al. 2020). Second, gateway math policies should include bilingual and dual language options where feasible, given strong evidence that such designs improve English learners' math outcomes (Beal et al. 2010; Saxe and Sussman 2019; August et al. 2023). Third, standards and accountability systems should monitor not only enrollment and pass rates, but also access to rigorous coursework and culturally/linguistically responsive instruction, since inequities in course taking and school composition are central drivers of attainment gaps for Latino, low-income and English learner students (Byun et al. 2015; Austin 2020; Powers and An 2023).

Theme 4: Teaching Quality and Preparation

Teacher quality is a central policy lever in determining whether algebra and introductory college math function as gateways or gatekeepers for historically marginalized students (Byun et al. 2015; Melguizo and Ngo 2020). From a policy perspective, decisions about licensure requirements, preparation pathways and professional learning structures directly influence which teachers are placed in gateway math classrooms and what expertise they bring to supporting Latino and English learner students (Anderson 2020). This section, therefore, examines how teachers' formal preparation, beliefs and instructional practices shape students' access to rigorous mathematics, their opportunities to learn and their developing math identities, with an eye toward levers that state, district and higher education policymakers can act on (Abdulrahim and Orosco 2020). This final theme covers three major subthemes: 1) teacher credentials and preparation pathways, 2) dispositions and culturally responsive practice, and 3) preparation to teach English learners and Latino students in math. Together, these strands underscore that who teaches gateway math, how they are prepared, and how they position students culturally and linguistically should be central considerations in policy efforts to improve equity across the secondary-postsecondary math pipeline (Anderson 2020; Abdulrahim and Orosco 2020).

As for teacher credentials and preparation pathways, research highlights that standard certification (university-based credentials as opposed to accelerated teacher preparation programs) is associated with higher math achievement (Anderson 2020). In Anderson's (2020) national study of novice algebra teachers, students taught by teachers with standard certification scored about 0.13 of a normed standard deviation higher on an 11th grade algebra exam, which can roughly equate to eight months of expected growth, than peers taught by nonstandard-certified teachers, even after accounting for prior achievement and student background. Yet previous curricular intensification policies such as "algebra for all" have provided instructional barriers to teachers who have limited experience with teaching accelerated content while trying to meet the needs of classrooms with uneven levels of prior math achievement (Austin 2020; McEachin et al. 2020; Brummet et al. 2024). Historically, research has shown that teachers with high-quality credentials and backgrounds are more likely to teach away from high-poverty schools, with multiple studies documenting stronger math teacher credentials that are disproportionately found in affluent settings (Clotfelter et al. 2015; Hogrebe and Tate 2012).

Even in schools that look diverse on paper, "second-generation segregation" often means that Black and Latino students are steered into lower-track math classes with less-qualified teachers, while advanced sections are filled mostly with white, Asian and more affluent students (Austin 2020; Domina et al. 2014; Remillard et al. 2017; Morton and Riegle-Crumb 2019). Less qualified teachers and weaker instructional environments in these lower tracks can dilute course rigor and undermine students' chances of progressing into and through advanced math sequences, even when course titles appear comparable across classrooms (Domina et al. 2014; Daun-Barnett and St. John 2012). Studies of "constrained curriculum" and universal algebra initiatives similarly show that when schools expand formal access to Algebra I without changing who teaches these courses, how they are taught, and how peer composition and support structures are organized, the result can be stagnant or declining test scores and persistent racial gaps in high-level course completion (Domina et al. 2014; Clotfelter et al. 2015; Hanselman et al. 2022).

When it comes to English learners, even teachers who hold standard certifications are often underprepared to meet students' linguistic and academic needs in math (August et al. 2023). August et al. (2023) synthesize a 15-year span of national reports and conclude that mainstream general education teachers routinely receive limited coursework, practicum experiences and professional development focused specifically on teaching English learners. At the same time, scholarship on culturally and linguistically responsive mathematics teaching shows that when teachers are supported to build on students' home languages and cultural practices, they can make math instruction more accessible and affirming for English learners (Abdulrahim and Orosco 2020). In their evaluation of the MELD intervention, August et al. (2023) demonstrate that when teachers receive high-quality professional development and curricular resources to integrate visual and linguistic supports, explicit academic language instruction, and structured opportunities for peer interaction, both English learners and English-proficient students make substantially larger gains in prealgebra skills and academic vocabulary than peers in "business-as-usual" supplemental instruction. Together, this highlights the need for policy attention to teacher education standards and in-service learning that explicitly prepares mathematics teachers to enact linguistically responsive and culturally sustaining instruction for English learners, rather than assuming that generic certification requirements are sufficient (Abdulrahim and Orosco 2020; August et al. 2023; Saxe and Sussman 2019; Ke and Newton 2024).

Conclusion

These findings have clear implications for future research and policy. Across these four themes, a common pattern emerges: Math policies that appear neutral at face value routinely sort students by race, class and language, channeling white, affluent and English-proficient youth into advanced pathways while Latino students and English learners are disproportionately held in lower tracks, redundant coursework and remedial sequences. Policies that merely move students faster into the same structures, such as early algebra mandates, blanket developmental opt-outs or nominal access expansions, do little to disrupt these patterns and can deepen existing inequities in under-resourced schools and colleges. In contrast, reforms that redesign placement rules, provide sustained instructional supports, and attend to school climate and teacher capacity show more promise for converting algebra and gateway math from gatekeepers to genuine gateways.

Taken together, the evidence points toward a set of design principles for more equitable math policy. Placement systems at both the secondary and postsecondary levels should rely on multiple measures and transparent criteria that minimize subjective bias and reduce unnecessary remediation while monitoring for resegregation within "universal" reforms. Effective reforms pair expanded access with additional instructional time, targeted corequisite or Double-Dose supports, and protections against tracking within schools and classrooms. At the same time, sustained investments in teacher preparation and professional development, including culturally and linguistically responsive mathematics instruction, are essential if gateway courses are to affirm Latino students' and English learners' identities and leverage their linguistic and cultural resources as assets, rather than treating them as deficits.

Building on these principles, several concrete policy recommendations emerge. First, state and district leaders should adopt transparent, rules-based placement systems for both eighth grade algebra and college gateway math that rely on multiple measures (such as prior coursework, grades and predictive indicators) and explicitly monitor for racial and linguistic disparities in course placement, repetition and remediation. Second, any efforts to expand access to Algebra I or college-level math should be coupled with funded, evidence-based supports, including double-dose or corequisite structures, bilingual or dual language math options, and integrated math-language interventions designed for English learners. Third, policymakers should revise teacher preparation, licensure and in-service learning requirements so that those who teach gateway math courses, particularly in schools and colleges serving large proportions of Latino students and English learners, receive sustained training in culturally and linguistically responsive mathematics instruction, with incentives to staff these courses with well-prepared teachers. Lastly, state and federal accountability systems should move beyond aggregate proficiency to track and publicly report who enrolls in, repeats and completes algebra and gateway college math (by race, language status and other key subgroups) and use these data to identify and address emerging forms of tracking and segregation.

Finally, this review also illuminates important gaps for future work. Few causal evaluations center Latino and English learner students explicitly in the design and analysis of algebra and developmental math reforms, and even fewer examine intersectional subgroups (such as recent-arrival English learners or Black Latino students) who face the steepest barriers. Implementation studies that follow reforms across classrooms, schools and colleges are needed to explain why similar policies yield different results for different groups and to identify the specific practices that help Latino and English learner students thrive in algebra and gateway math. As states, districts and higher education systems respond to post-pandemic learning loss and outdated policy practices, these research and policy priorities will be critical for ensuring mathematics functions as a lever for opportunity rather than a mechanism for further stratification.

Breakdown of States and Policies Within the Literature				
State	**Policy/Intervention**	**Key Findings/Features**	**Relevant Notes**	**Citation(s)**
California	Eighth grade Algebra for All expansion; 2008 Algebra I test decision	Eighth grade algebra enrollment more than tripled; achievement effects were mixed/ negative when scaled without support; widened inequities in some contexts.	Implemented in a majority-Latino state; schools serving Latino students often had fewer qualified teachers and resources, limiting benefits.	Domina et al. (2014); Domina et al. (2015); Hanselman et al. (2022)
California	CCSS-M (Common Core State Standards in Mathematics) Transition, Detracking vs. Compression Debates	District leaders rejected middle school compression as inequitable and logistically unworkable; pursued detracking plus messaging on rigor and benefits for all students.	Motivated in part by underrepresentation of Latino and Black students in AP (Advanced Placement) Calculus/Statistics; equity framing explicitly referenced racial gaps.	Handsman, Farrell, and Coburn (2022)
Texas	Long-run State Assessment Trends (Fifth and Eighth grade)	Over 16 years, Hispanic students score ~8 points lower than white students on fifth grade math; by eighth grade, the gap exceeded by 15 points.	Demonstrates that Latino underperformance precedes Algebra I and reflects long-term opportunity gaps.	Craft and Slate (2024)
Texas	Algebra I End-of-Course Accountability	This policy highlights persistent gaps: In 2019, 83% of Hispanic vs. 89% of white students met "approaches". The gaps widen at "meets" and "masters" level.	At-risk Hispanic girls and boys fail at much higher rates; at-risk Hispanic girls answer 10-12 fewer items correctly than non-at-risk peers.	Craft and Slate (2024)
Florida	SB 1720 Developmental Education Reform	Made remedial/ developmental education optional; more underprepared students were placed directly into college math, with mixed success across colleges. This was especially important for Latino students concentrated in Florida's two-year colleges; direct placement without supports may have exacerbated inequities.	Important for Latino students concentrated in Florida's two-year colleges; direct placement without supports may exacerbate inequities.	Hu and Hu (2022); Hu et al. (2023); Park et al. (2018)

State	Policy/Intervention	Key Findings/Features	Relevant Notes	Citation(s)
North Carolina	Districtwide Accelerated Algebra (Charlotte-Mecklenburg-Guilford)	Aggressive eighth-grade acceleration lowered Algebra I and geometry performance for moderately skilled students; no clear gains in later math. High-poverty, high-minority schools, which often served Latino students and English learners, were less equipped to support accelerated cohorts.	High-poverty, high-minority schools (often serving Latino students) less equipped to support accelerated cohorts.	Clotfelter, Ladd, and Vigdor (2015)
North Carolina	Wake County EVAAS (Education Value-Added Assessment System) based Middle-Grades Math Placement	An EVAAS rule (~70% predicted probability threshold) sharply increased acceleration; eligible Black and Hispanic students' acceleration rates doubled, and conditional race/income gaps shrank. The policy improved access for Latino students who had previously been overlooked, but their overall representation in advanced tracks still lagged their share of enrollment.	Improved access for Latino students who were previously overlooked, but overall representation in advanced tracks still lagged their share of enrollment.	Dougherty et al. (2015)
Illinois (Chicago)	Ninth Grade Universal Algebra I ("Algebra for All")	Increased algebra credit accumulation but also raised failure rates and did not improve test scores or college outcomes overall. Latino students in Chicago Public Schools were more likely to attend under-resourced schools, which amplified the negative effects of universal mandates.	Latino students in Chicago Public Schools (CPS) were more likely to be in under-resources schools, amplifying negative effects of universal mandates.	Allensworth et al. (2009); Nomi (2012)

State	Policy/Intervention	Key Findings/Features	Relevant Notes	Citation(s)
Illinois (Chicago)	Double Dose Algebra (Two Periods for Low Scorers)	This policy generated short-term gains in GPA and test scores and long-term gains in ACT scores, graduation and college entrance. Policy effects strongest where classes were not fully segregated by skill. Hispanic students benefited, but less than Black students on some outcomes; the model did not fully address language and poverty barriers facing Latino and English learner youth.	Hispanic students benefitted, but less than Black students in some outcomes; did not fully address language and poverty barriers facing Latino youth.	Nomi and Allensworth (2009); Nomi and Raudenbush (2016); Cortes et al. (2015)
Tennessee	Statewide Dual-credit Courses with Common Exams	This policy expanded access beyond typical AP population; most students failed end of course exams, raising concerns about rigor/support.	Offers a model for broad access to college-level math that must be adapted with supports for Latino students to be equitable.	Hemelt and Swiderski (2021)
Kentucky	Dual-credit College Algebra	Dual-credit algebra improved immediate enrollment, first year GPA, time to degree (1.44-2.16 months faster) and bachelor's completion, especially for low-ACT students. Findings suggest that, when given access and support, students traditionally labeled 'not college ready' (often low-income, including many Latinos) could thrive.	Suggest that when given access and support, students traditionally labeled as "not college ready" (often low-income, including Latinos) can thrive.	Heavin and Ma (2022)

State	Policy/Intervention	Key Findings/Features	Relevant Notes	Citation(s)
New York	Stretch Regents Curriculum (Prealgebra Reform)	This policy targeted strengthening prealgebra content rather than moving algebra earlier; evidence on effectiveness is mixed. The model illustrated an alternative to acceleration that could better serve Latino students who need more time with foundational content.	Illustrates an alternative to acceleration that could better serve Latino students who need more time with foundational content.	Clotfelter, Ladd, and Vigdor (2015)
New York	Corequisite Remediation	Under the mainstreaming/ corequisite model, students were traditionally placed into remedial algebra instead enrolled directly in college statistics with a concurrent workshop. This policy enabled students to be enrolled directly into a credit-bearing statistics course with a workshop. Traditional path yields ~25% completion of statistics within two semesters; whereas statistics with workshops yield a 55.69% first semester pass rate, implying at least 2,739 additional students completing statistics within two terms. Because remedial algebra disproportionately enrolled low-income and minority students, moving these students (including many Latino students in New York City) directly into credit-bearing statistics with support substantially improved quantitative credit accumulation and reduce the "math roadblock" in the first year.	Designed to replace remedial algebra, which disproportionately enrolls low-income and minority students. By moving these students (including many Latino students in New York City) directly into credit-bearing statistics with support, the model substantially improves quantitative credit accumulation and reduces the "math roadblock" in the first year.	Logue et al. (2016)

State	Policy/Intervention	Key Findings/Features	Relevant Notes	Citation(s)
Multistate/ National	ELL Policies and Math Outcomes (CA, TX, NC, NY, FL, IL, AZ, NM, CO, MA)	States with large ELL populations struggle placing ELs into Algebra I; limited English reading proficiency strongly predicts Algebra I failure and dropout risk. This was highly relevant for Spanish-speaking Latino ELs, who made up the majority of ELs and were disproportionately affected by English-only placement and testing policies.	Highly relevant for Spanish speaking Latino ELs, who make up the majority of the ELs and are disproportionately affected by English-only placement and testing policies.	Beal et al. (2010); August et al. (2023)

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